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Detecting biased veto voting in the UN Security Council

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DETECTING BIASED VETO VOTING IN THE UN SECURITY COUNCIL

by

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Dedicated to all innocent souls who have lost their lives or suffered severe injuries through conflict and war which could have been prevented had no veto been cast

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– Cedric Van Labeke

CONTENTS

SUMMARY

The United Nations was formed in 1946 after the League of Nations had failed to prevent World War II. According to the UN charter, the responsibility for the maintenance of international peace and security has been delegated to the UN Security Council (UNSC) which consists of 15 members. The victors of World War II: The United States, the United Kingdom, China, Russia, and France - are considered permanent members and are better known as the permanent 5 or the P-5. The P-5 have a unique privilege, the veto power. With it, they can reject any proposal that is brought forward by any state in the form of a resolution. Unfortunately, there have been several situations in which the veto was used to protect themselves or a political ally. Even while it may oppose international law or prevent humanitarian aid to countries afflicted by war or terrorism, occasionally at the expense of innocent children their lives.

In this research, we wanted to evaluate how we can use software engineering and machine learning techniques to detect, and hopefully in future work ultimately mitigate and control, biased veto voting in the UN Security Council (UNSC). We first investigated what data is available to work with and concluded there was no data available that captures what we need. We wrote a data loader that scrapes the un.org website. It parses the HTML, downloads the meeting transcript and resolution texts, which results in a data structure that persists into a relational database. Multiple data inconsistency issues were found and were fixed together with the UN Dag Hammarskjöld Digital Library. To support reproducible science the dataset we used for this research is available on GitHub[1], together with all the Python code.

We also provide an overview of the exploratory data analysis (EDA) performed on the available data. We loaded our database in Pandas dataframes for easy data manipulation and ease of visualizing the findings. We conclude that Russia and the USA are the two permanent Security Council members using the veto power the most. The data gives an indication of strong negative bias towards certain topics, and even towards certain ethnic groups. In particular, Palestine and Syria, by the USA and Russia respectively, often accompanied with words *Arab, Terrorist, Weapon, ...* when the veto power is used. Other not-vetoed topics use a more general language that represents the primary mission of the Security Council more. These results were found by doing a word frequency analysis on cleaned text corpora used in vetoed, and non-vetoed contexts. We also concluded that discussions in meetings with veto are longer, presumably due to longer speeches to defend a veto or to express disappointment and frustration. This led to the analysis of sentiment polarity and subjectivity, where we found that in vetoed meetings, a more neutral and objective language is used, contrary to what we assumed earlier.

[1] https://github.com/cvanlabe/MScThesisSE

Next, we interviewed highly renowned and respected academics in their field of international relations and politics, as well as government representatives to the UN. The primary goal of the interviews was to have design input and validation for our goal to develop a computational model detecting bias. We questioned bias, the value of veto, the use of it, and if and how an intelligent machine could mitigate it. The consensus amongst all interviewed subject matter experts was that a veto vote is biased by nature and considered unjustified or illegitimate in situations where it favors self-interest over humanitarian aid and/or opposes international law. We also learned that what is published on the un.org website is only the tip of the iceberg. The majority of topics are discussed behind closed doors, never reaching the public. This significantly limits the available data to work with. When it comes to consequential actions of such biased veto votes, one suggestion was made that if a machine could detect it, it casts a super veto which vetoes the veto. This brought back the issue of self-interest and that anything that potentially reduces the veto-holding members their power would never be accepted.

Finally, we built a computational model to predict veto votes based on topic and a resolution text using deep learning. We describe a multi-label classifier to predict which permanent member could use their veto power. We built this classifier by fine-tuning the BERT large model. Our results show that it is conceptually possible to build a model that can predict a veto vote. Our model did however not acquire sufficient accuracy to be usable because of a too-small training dataset.

In summary, we showed by means of a - to our knowledge, the first attempted - prototype the way to analyze and predict (biased) veto voting in the UN Security Council, given the data we have been able to make available. We recognize that some conclusions in this report contain strong language that may be considered offensive by some and may lead to criticism. Due to this, we spent extra efforts to remain as objective and impartial as possible, as what is expected of academic research. We made sure the results seen in the data are valid, repeatable, and not misinterpreted.

SAMENVATTING

De Verenigde Naties werden in 1946 opgericht nadat de Volkenbond (League of Nations) er niet in was geslaagd de Tweede Wereldoorlog te voorkomen. Volgens het VN-handvest is de verantwoordelijkheid voor de handhaving van de internationale vrede en veiligheid gedelegeerd aan de VN-Veiligheidsraad (UNSC), die uit 15 leden bestaat. De overwinnaars van de Tweede Wereldoorlog: de Verenigde Staten, het Verenigd Koninkrijk, China, Rusland en Frankrijk - worden als permanente leden beschouwd en zijn beter bekend als de permanente 5 of de P-5. De P-5 hebben een uniek voorrecht, het vetorecht. Hiermee kunnen ze elk voorstel verwerpen dat door een staat wordt ingediend in de vorm van een resolutie. Helaas zijn er verschillende situaties geweest waarin het veto werd gebruikt om zichzelf of een politieke bondgenoot te beschermen. Ook al is het in strijd met het internationaal recht of verhindert het humanitaire hulp aan landen die zijn geteisterd door oorlog of terrorisme, soms ten koste van onschuldige kinderen hun leven.

In dit onderzoek wilden we evalueren hoe we software engineering en machine learning technieken kunnen gebruiken om biased of partijdig gebruik van veto in de VN Veiligheidsraad kunnen detecteren, om uiteindelijk met toekomstig onderzoek het te kunnen tegengaan en bedwingen. We onderzochten eerst welke data beschikbaar is om met te werken en besloten dat er geen data beschikbaar was die gebruikensklaar was voor wat we nodig hadden. We ontwikkelden een data loader die the un.org-website schraapt. De loader ontleedt de HTML, downloadt het transcript van de vergadering en de resolutieteksten, wat resulteert in een gegevensstructuur vastgelegd in een relationele database. Er werden meerdere problemen met inconsistentie in de gegevens gevonden en deze werden samen met de VN Dag Hammarskjöld Digital Library opgelost. Om reproduceerbare wetenschap te ondersteunen, is de dataset die we voor dit onderzoek hebben gebruikt beschikbaar op GitHub[2], samen met alle Python-code.

We geven ook een overzicht van de verkennende data-analyse (EDA) die is uitgevoerd op de beschikbare data. We hebben onze database in Pandas-dataframes geladen voor eenvoudige gegevensmanipulatie en het visualiseren van de bevindingen. We concluderen dat Rusland en de VS de twee permanente leden van de Veiligheidsraad zijn die het vetorecht het meest gebruiken. De gegevens geven een indicatie van een sterke negatieve partijdigheid bij bepaalde onderwerpen, ook naar bepaalde etnische groepen toe. Met name Palestina en Syrië, door respectievelijk de VS en Rusland, vaak vergezeld van woorden zoals *Arabisch, Terrorist, Wapen, ...* wanneer het vetorecht wordt gebruikt. Andere onderwerpen waarover geen veto is uitgesproken, gebruiken een meer neutrale taal die meer de primaire missie van de Veiligheidsraad vertegenwoordigt. Deze resultaten werden gevonden door een woordfrequentieanalyse uit te voeren op opgeschoonde tekstcorpora die werden gebruikt in veto- en niet-veto-contexten. Ook kwamen we tot de conclusie dat discussies in vergaderingen met veto langer duren, vermoedelijk door langere toespraken om een veto

[2] https://github.com/cvanlabe/MScThesisSE

te verdedigen of om teleurstelling en frustratie te uiten. Dit leidde tot de analyse van sentiment; polariteit en subjectiviteit, waarbij we ontdekten dat in vergaderingen met veto een meer neutrale en objectieve taal wordt gebruikt, in tegenstelling tot wat we eerder aannamen.

Vervolgens hebben we interviews gehouden met gerenommeerde en gerespecteerde academici op hun gebied van internationale betrekkingen en politiek, evenals regeringsvertegenwoordigers bij de VN. Het primaire doel van de interviews was om ontwerpinput en validatie te hebben voor ons doel om een computationeel model te ontwikkelen dat bias detecteert. We stelden partijdigheid, de waarde van een veto, het gebruik ervan en of en hoe een intelligente machine dit zou kunnen verminderen, in vraag. De consensus onder alle geïnterviewde experten was dat een vetostem van nature partijdig is en als ongerechtvaardigd of onwettig wordt beschouwd in situaties waarin het eigenbelang boven humanitaire hulp gaat en/of tegen internationaal recht ingaat. We hebben ook geleerd dat wat op de un.org-website wordt gepubliceerd, slechts het topje van de ijsberg is. De meeste onderwerpen worden achter gesloten deuren besproken en bereiken nooit het publiek. Dit beperkt de beschikbare gegevens om mee te werken aanzienlijk. Als het gaat over hoe consequentie te geven aan dergelijke partijdige vetostemmen, werd een suggestie gedaan dat als een machine het zou kunnen detecteren, het een superveto kan uitspreken dat het initiele veto ontkracht. Dit bracht de kwestie van eigenbelang terug en dat alles wat de vetohoudende leden hun macht zou kunnen verminderen, nooit zou worden geaccepteerd.

Ten slotte hebben we een model gebouwd om veto-stemmen te voorspellen op basis van onderwerp en een resolutietekst met behulp van deep learning. We beschrijven een multi-label classifier die voorspelt welk permanent lid zijn vetorecht zou kunnen gebruiken. We hebben deze classifier gebouwd door het BERT-large model te verfijnen. Onze resultaten laten zien dat het conceptueel mogelijk is om een model te bouwen dat een veto kan voorspellen. Ons model had echter niet voldoende nauwkeurigheid om bruikbaar te zijn vanwege een te kleine trainingsdataset.
Samenvattend hebben we door middel van een - voor zover ons bekend het eerste gepoogde - prototype laten zien hoe we (partijdige) vetostemming in de VN-Veiligheidsraad kunnen analyseren en voorspellen, op basis van de gegevens die we ter beschikking hebben kunnen stellen. We erkennen dat sommige conclusies in dit rapport sterke taal bevatten die door sommigen als beledigend kan worden beschouwd en tot kritiek kan leiden. Hierdoor hebben we extra inspanningen geleverd om zo objectief en onpartijdig mogelijk te blijven, zoals van wetenschappelijk onderzoek wordt verwacht. We hebben ervoor gezorgd dat de resultaten in de gegevens geldig, herhaalbaar en niet verkeerd geïnterpreteerd zijn.

1

INTRODUCTION

On the 4th of February 2012, the United Nations Security Council (UNSC) backed by the League of Arab States came together in New York to discuss the situation of the Syrian conflict [Carswell, 2013]. Significant human rights violations were reported, and 200 civilians were already killed by the Syrian government. The world its attention was required. Of the 15 UNSC members, 13 voted in favor of resolution S/2012/77, demanding a cease-fire, and asked for a fair process to come to peace and address the concerns of the Syrian people. Russia and China, both permanent members, did not agree and annulled the proposal. The 5 permanent UNSC members (US, UK, China, Russia, and France) have the power to reject and stop any proposals without further explanations using what is called a veto. Could one say that Russia and China disagreed in their voting to the main purpose of the UNSC - international peacekeeping and security [Okhovat, 2012] - and thereby blocking it from within?

Since the United Nation's birth in 1946, numerous veto votes have been cast on resolutions [Okhovat, 2012]. Given that only 5 countries have veto power, effectively able to veto any proposal by any of the 193 UN member states, has raised the question about democracy and UNSC reforms multiple times [Carswell, 2013] [Okhovat, 2012] [Weiss, 2003]. One of the suggested reforms is "Uniting for Peace". This reform suggests that if a veto vote is suspected too biased, while a majority of votes were in favor of the resolution, the voting can be escalated to the larger UN General Assembly (UNGA) which consists out of all 193 member states (compared to 15 in the UNSC). If in such UNGA special meeting a 2/3 majority of votes is in favor of the resolution there, the resolution can still be adopted, despite an earlier veto of a UNSC permanent member [Carswell, 2013].

In this document, we outline our research into how Software Engineering together with Machine Learning and Deep Learning techniques can be used for a purpose of greater good. We strive for a better data-driven understanding of the UNSC veto voting and its triggers, and research if vetoes can be predicted and - in future work - mitigated. We know there is bias in the UNSC resolution voting when it comes to the speed of sending force troops to conflict zones [Benson and Kathman, 2014], but there is little to no scientific literature about UNSC voting bias besides that [Benson and Kathman, 2014]. We recognized this as a knowledge gap and asked ourselves what bias means in the context of veto voting, and further, how such bias relates to or may trigger a veto. We wondered if we can predict

veto votes, with the ultimate goal of providing the ability to prepare any mitigating actions. Alternatively, to give further consequence when discussions or resolutions concern a topic that should not be vetoed but still is.

In the rest of this document, we describe our research and results, divided into 7 chapters. In chapter 2 we give more background on the problem and its importance. We divide the problem domain background into two parts. First, we give an overview of the United Nations, the problem we try to address, and why it is worth solving. Second, we discuss the literature around the complex concept of bias. Next, in chapter 3 we provide an overview of the research questions we used to structure our research. We describe what research goals we set for ourselves to find answers to the research questions, and provide a summary of the methods used for the research. The next chapters each give a detailed overview of how one or more research questions were handled. Chapter 4 discusses the software engineering work to build a dataset, a large endeavor. Chapter 5 describes a data analysis of the newly acquired data focused on veto voting. Next, in chapter 6 we give an overview of the results coming from interviews with UN Subject Matter Experts. Furthermore, we discuss our solution prototype using deep learning in chapter 7. We first provide a theoretical overview with peer software engineers as the target audience. In the second part, we discuss the details of how we built our prototype to predict vetoes. Each chapter ends with a conclusion to the investigated research questions. Finally, we end with chapter 8 in which we summarize our answers to all research questions, an answer to the main research question, a discussion, and future work recommendations.

2

BACKGROUND

2.1. UNITED NATIONS

In 1920, shortly after World War I, the first intergovernmental organization "League of Nations" (LON) was born with a mission to maintain world peace [Northedge, 1986]. In its existence, it had a maximum of 58 member states, all with a vote. After World War II had taken place, the league was dismantled and considered a failure. It had not succeeded in its primary objective. In 1945, the United Nations (UN) was formed as the league its successor [UN]. The UN has several bodies. The UN General Assembly (UNGA) is the closest in character to the LON. It consists out of 193 member states and can make recommendations. The responsibility of peacekeeping and security is delegated to the UN Security Council (UNSC) according to art. 24-25 of the UN Charter [UN].

Thomas G. Weiss explains [Weiss, 2003] that one of the primary reasons the League of Nations failed was that for any security proposal to come through, each member state had to agree. To prevent this problem from happening again, the founders of the UN restricted the UNSC to only 15 members. The 5 founding states - the victors of World War II: the United States, the United Kingdom, China, Russia, and France - are considered permanent. They are often called the Permanent 5 or P-5. The 10 other members receive 2-year seats and are rotated yearly. The P-5 have a unique privilege, the veto power. With it, they can reject any proposal, without an obligation to explain why they are casting a veto. The main tasks of the UNSC [UN] are international peacekeeping and security, admission of new UN members, the appointment of the new Secretary-General of the UNGA, and to elect judges of the International Court of Justice (ICJ) in Den Hague. It is the only body in the UN with the power of issuing legally binding resolutions all other members need to accept. When it comes to a procedural issue, 9 UNSC members need to approve for it to pass. For issues and decisions of substance, 9 members need to approve without any veto cast, or without 7 members voting against it. In conflict situations, the UNSC will recommend a peaceful settlement. When this fails and it becomes too violent, the UNSC may issue ceasefire directives, send peacekeeping forces, establish economic sanctions, or launch collective military action.

All read literature on the subject [Okhovat, 2012] [Carswell, 2013] [Weiss, 2003] [Valeriu, 2018] agrees there has been a significant amount of criticism on the UNSC, and multiple

calls for reform have been recorded. The main criticism is the fact that it is not democratic. 15 States, of which 5 can veto anything they do not like, decide on behalf of all other 193 member states. There are also notions towards conflict of interest with peacekeeping since the P-5 are part of the top 10 arms exporters [Okhovat, 2012]. The other big point of criticism is the growing number of self-interest of allied veto usage. 14 Vetoes used by the US in the last 20 years were to protect Israel [Okhovat, 2012] [vet]. [Okhovat, 2012] and [Weiss, 2003] explain further the multiple reform proposals that have passed the revenue. It is important to realize that the UNSC needs to approve any sort of reform, so anything to do with making the veto power disappear, shared with other (new) members, or diminishing its effectiveness, has no strong support with the P-5 [Hosli and Dörfler, 2019]. One of the more popular proposals is the addition of additional permanent members. Germany, Japan, India, and Brazil - called the G4 - are seen as potential new members. The United States became hesitant however due to their abstaining vote for a resolution on Libya [Okhovat, 2012]. Another proposal is to consider the G20 members, which represent over 65% of the world population. The problem with this proposal is that the G20 are rich states, which means smaller and poorer states are left out and are not represented again. A by-product of adding new members is that as the UNSC becomes larger, it may also become more inefficient (like the LON was). [Weiss, 2003] believes *"the group would be too large to conduct serious negotiations and still too small to represent the UN membership as a whole"*.

The last reform we reviewed is the "Uniting for Peace" resolution. It was the United States who was fed up with the Soviet Union using its veto 26 times between 1946 and 1949, and for the attack of North Korea on South Korea in 1950 [Carswell, 2013]. The resolution requests an escalation to a UNGA special session if the UNSC is considered blocked, unable to agree, and 7 UNSC members request a special session. Such special session needs to happen within 24 hours and needs to come from the UNSC itself in order to be legal. If the UNGA were to call for it themselves, they violate the UN Charter its internal division of responsibilities between the principal organs. While the P-5 can cast a veto without any explanation, it has to be in good faith according to art.2 of the UN Charter [UN]. If a veto is used for reasons not coinciding with the UNSC its primary responsibilities, it can be considered as a violation of the good-faith requirement. With over 200 veto votes recorded so far, the process only kicked in 10 times. This shows that there is an actual good use for the veto. It also reveals that there is a historical reluctance of UNGA members to challenge the P-5 authority, fearing economic, and political consequences when they fall out of favor with any of them. [Okhovat, 2012] gives the example of how Palestine, who wanted to seek UN membership, and knew the request would be vetoed by the US, could benefit from this resolution. With already 122 countries recognizing Palestine as a state, there was a big chance for success. The American ambassador to the UN, Susan Rice, closed that door by threatening to stop all support and funding of the UN. [Weiss, 2003] confirms the power of this threat by explaining how the US is the only military superpower in the world now actually giving the UN the ability to perform its prime military responsibilities. Until Europeans spend considerably more on defense and have their own independent military capacity, whatever military operation taking place, will only happen if the US approves [Weiss, 2003].

As discussed earlier, changing the composition of the UNSC would not solve everything. It would definitely not overcome its other main point of criticism: the veto. The P-5 will

more than likely never give up on the veto as it gives them too much power to just let go of. For this research, we kept that in mind. Rather than trying to remove the veto, we keep its existence, and embrace it, as long as it is justified. Maybe leverage the "Uniting for Peace" resolution in an autonomous way, maybe by calling a super veto on a veto, driven by an Artificial Intelligent Machine - the "watchdog" - which can detect in an unbiased way when a veto is not used in good faith. No existing research exists in this field yet.

Whereas now 7 UNSC members need to request for a UNGA special session, the council could be advised by such an intelligent model acting as a decision-support tool to assist this process. A potential future implementation may then raise anonymous voting for a UNGA special session escalation. This way, other members do not need to be afraid of repercussions from the veto-casting member(s). The main problem to solve first then is understanding what bias means, what triggers it, how it relates to or impacts veto votes, ... etc. That way, an intelligent machine can learn how to detect bias, such that if eventually a veto is cast, the watchdog can signal bias is at play.

2.2. BIAS

To detect bias and give it consequences, we first need to understand what bias really is, and how it typically reveals itself. In this research we focus on the political, international relations setting, the United Nations ultimately is. We briefly analyzed related work in other fields as well to validate and defend choices made in later chapters.

[Pryzant et al., 2020] researched the automatic neutralizing of subjective bias in text. To neutralize bias, we first require it to be detected. While neutralization is not particularly interesting for our research, the ability to detect subjective bias definitely is. [Pryzant et al., 2020] used the Wikipedia Neutrality Corpus (WNC). It is a dataset that has 180000 biased and neutralized sentences, built from Wikipedia sentence edits to make sure they become aligned with the Wikipedia Neutral Point of View (NPOV) policy[1]. Looking at the dataset, they found that subjective bias is commonly seen in history, philosophy, sports, language, and politics. Subjective bias is much less found in a topic like arts. They conclude there is a good relationship between a given topic and the amount of bias. To build their text classifier, they used a BERT-based algorithm. This model can then detect subjective text that can be replaced or removed to de-bias the sentence. The accuracy of this approach was higher than other methods such as a simpler bag-of-words. While this research was focusing on single-word bias, they recommend further research in multi-word or multi-sentence detection. They also hint that fact-checking is an important direction to do further research in. This brought us to the paper of [Atanasova et al., 2019] who built an intelligent system able to identify claims made during a political debate that need truth verification.

In the 2016 US election debates, Trump and Clinton made several claims that needed a veracity check. The number of claims to be checked was challenging for journalists who had to prioritize which claim to fact-check first. [Atanasova et al., 2019] created a model that can detect which claims during a political debate need fact-checking and in what order. This too is interesting for us, as being able to detect false claims is definitely an indica-

[1] https://en.wikipedia.org/wiki/Wikipedia:Neutral point of view

tor of bias. While a UN Security Council meeting is not a debate, some of the features used seem useful. A first group of features are what they call *"Discourse"* features. Using a discourse parser [Joty et al., 2015], an entire block of sentences can be parsed into a tree structure. This tree represents how each sentence is related to another as a contextual indicator. Examples of such indicators are BACKGROUND, CAUSE, ELABORATION, ENABLEMENT. These indicators give insight into the purpose a sentence serves as the speaker utters them. If we look at the sentence *"When the first rocket hit the building, as a reaction to a threat, people fled the scene"*, the first part about a rocket hitting a building, would be classified as BACKGROUND by the parser. The reaction to a threat would be ELABORATION, and the people fleeing - an action - would be classified as ENABLEMENT.

Another interesting group of features is the sentiment ones. Sentences that are of negative sentiment, often indicate a claim may need to be fact-checked. They used the NRC sentiment lexicon [Mohammad and Turney, 2013] as a source for words and n-grams with negative sentiment. [Atanasova et al., 2019] also looked at Named Entities (NE) and linguistic features. Named Entities are real things (people, organizations, ... entities) with a name. When used in a debate, and an entity is called out by its name, it often involves a claim in need of fact-checking. They used the NLTK[2] toolkit for this. For the linguistic features, the looked at the frequency of occurrences of words indicating subjectivity [Riloff and Wiebe, 2003], and sentiment [Liu et al., 2005]. Finally, [Atanasova et al., 2019] also found the tense and length of a sentence important features. It is typically claims about the past that need verification. It is also found that short sentences are less likely to have false claims. As such, the chance of finding claims that need fact-checking is linearly dependent on the length of the sentence.

We also reviewed the work of [Pinto et al., 2020] who propose research into how NLP machine learning techniques can be used to detect biased language in court decisions. They argue that while there are already useful research results in computational models detecting feelings, subjectivity, opinions, factual data, beliefs, politeness, respect and power, gender bias, and others, the application to decision-making in court is novel. In contrast to existing researched discourse types of text genres, they state that court decisions are a genre in which subjectivity and bias are not explicitly revealed and require extra care. They suggest corpus annotations by labeling potentially biased words or sequences and evaluating the annotations leveraging agreement metrics between annotators, minimizing the bias of the annotators themselves. Finally they propose to use the transformer-based BERT architecture [Devlin et al., 2019] for the bias detection model itself. Some of the reasons they highlight for choosing BERT are its versatility, fine-tunability to virtually any NLP task, and the ability to use data from other domains, more commonly referred to as transfer learning [Ruder et al., 2019].

Furthermore, [Cardon et al., 2021] researched the use of AI tools to analyze and evaluate business meeting transcripts. They reveal several concerns that they feel should be addressed in organizational policy-making, one of them being trust in AI versus trust in people. They discuss that many participants in their study suggest that people should still make decisions and that AI tools can be merely an additional input into decision making.

[2] https://www.nltk.org/

Other participants stated that AI could be more trustworthy than humans, less biased, to the extreme of suggesting AI algorithms potentially being capable of removing bias altogether. It is also highlighted that some emphasize how AI can help avoid bias. [Seeber et al., 2020] warn us that the ML algorithms themselves can also be biased and may lead to incorrect decision-making. It is important to recognize the data training data should not be biased but can be [Johnson, 2021] and that developers should not program (un)conscious bias in their algorithms [Kirs et al., 2001].

The research of [Menger et al., 2019] provides another dimension of how Machine Learning can be used for decision making. They questioned how Natural Language Processing (NLP) techniques can be used to analyze psychiatric patient health records and assess the risk for violence. They mention that the field of medicine already has success in clinical decision-making when it comes to cardiology, dermatology, and oncology, but that there is still a lot to be done in the psychiatric domain. They used a word-frequency approach in the exploratory data analysis to reveal the real triggers of potential violence. A deep learning model Paragraph2vec [Le and Mikolov, 2014] was used to convert the clinical note texts, context- and word order-aware, into a numerical representation required for a classification model to work with it [Le and Mikolov, 2014] [Zhang et al., 2021]. They proved that such classification prediction is possible and managed to achieve good results confirmed by qualitative evaluation by a knowledgeable group of people and Machine Learning Model performance evaluation. [Mosteiro et al., 2021] extend this research and used the newer BERT-based model Bertje [de Vries et al., 2019] for text classification. Since BERT is limited to 512 tokens in a sequence [Sun et al., 2019], they experimented with 2 strategies to make the longer texts usable by BERT. One approach was simple truncation, another one was leveraging Gensim TextRank[3] to summarize the text in less than 512 tokens. Against the expectations, the BERT-based model they used performed worse than the other machine learning models. The authors suspect that the information loss that comes from shortening the texts is one of the main reasons for the lower accuracy. They suggest future work to look into a new SMITH [Yang et al., 2020], a BERT-like model to overcome the 512 token limitation. A second reason they highlight is that the tokenizer does not always handle words it does not know correctly. As such the text becomes interpreted to something else than the original meaning and classification errors occur. They advise that a medical-term aware BERT model could be trained for future research.

From a political point of view, [Benson and Kathman, 2014] confirms that the presence of bias in the UNSC resolution voting has little to no scientific literature. This speaks to the novelty of our research. Their research paper focuses on how bias towards a given party in a conflict influences the speed and effectiveness of sending force troops to conflict zones. They explain that the coding of bias in the resolutions is easy and predictable since the text is written conforming to a standard format and language. Please refer to Appendix C for an example of a resolution. They consider a resolution biased if it *demands*, *urges*, *condemns*, *deplores*, or *establishes sanctions* against a specifically named party. If that party was addressed negatively, there is a negative bias.

[Donnelly, 1988] also recognizes there is bias amongst the UN member states but gives a

[3] https://radimrehurek.com/gensim_3.8.3/summarization/summariser.html

different description. In his work, he differentiates two kinds of bias. When comparable violations in two countries are responded to unequally, there is a bias towards one since both should be treated in the same way. Similarly, when some of the rights contained by [The International Bill of Human Rights] - we mention the right to live, security of person, non-discrimination, protection against arbitrary arrest and detention, freedom of speech, press, assembly, association, political participation, food, health care, education, social security, and work - are systematically neglected, dismissed, or ignored for political or ideological reasons there is also clear evidence of bias. In his research, he has built a dataset of meeting time per topic of the UNGA. He argues that while some might say just measuring meeting time per topic is not a strong indicator for bias, discussion is a key UN work method, especially to implement human rights. He states that *"Words are the principal weapon of the United Nations in the struggle for human rights"*. Gathering the member states for a meeting must be worth their time, so spending scarce meeting time on a topic signifies its importance. According to this reasoning, tracking how often there's been discussion on a topic is a good indicator of importance towards the UN. It is with that indicator he recognizes some bias in the UNGA since he finds that some states are more targeted than others for similar, if not worse, human rights violations.

[Donnelly, 1988] further suggests that the UN largely ignores some identified problems because the beneficiaries of existing policies causing them are the ones who speak for their government in the UN meetings. In other words, the UN reflects the priorities of its member states. This statement is corroborated by [Redd and Mintz, 2013] who give an overview of decision-making processes and strategies in international relations. They mention that the government actors bargain over decision outcomes considering the different policy goals of others. The bargaining happens such that ultimately their organization's interests are maximized. Politicians in their decision-making strategies are averse to loss (of face) and will reject alternatives that make them look bad politically.

These are all forms of bias and politicians or state actors are often affected by serious bias in their decision-making. As can be seen from the discussed literature, and the work of [Jervis, 1976], there is a multitude of bias types. Significant academic research has been done in identifying them, and many of them have been incorporated into various theories of decision making. Few effort are made however to really compare the different types of bias and their effect on decision making. Worse, according to [Redd and Mintz, 2013] more research would need to be done on how the different types affect foreign policy and national security decision making.

One of the ways of mitigating bias in the UN according to [Donnelly, 1988] is to make sure bias is condemned and explicitly pointed out consistently. He mentions that this will meet resistance by the member states, which is also why we interviewed UN SMEs to get better insights into how the (consequences of) bias can be controlled. Completely debiasing - removing bias - is much more difficult to impossible as a) it is not possible for all types of bias, b) requires more cross-domain research (eg: psychology) according to [Renshon and Renshon, 2008], and c) would never work during a live UNSC meeting.

With the UNSC being a mediator in conflict and considering its primary mission, we

also look at mediation during conflicts and how it relates to bias and credibility. With the UNSC its primary peacekeeping role, it may assign special representatives acting as a mediator between the parties in conflict. Whereas traditionally it is expected for a mediator to be impartial, unbiased. [Kydd, 2003] explains that for a mediator to be effective in their mission, they have to be biased to "your side". The examples used are about mediation to convince parties in conflict not to proceed with military action. One reason can be because the other party has no real military leverage anyway, or the complete opposite, to not proceed since the other side has high leverage and will respond with defeating force. [Kydd, 2003] further elaborates if the mediator is completely unbiased, neither side will believe the mediator. The unbiased mediator wants to minimize the possibility of (further) war and will say whatever is needed (even if untrue) to reduce the likelihood of further armed conflict. The mediator who is biased against you will not be believed either as they have strong incentives to exaggerate available military leverage. Only the mediator biased to your side is believed when they make claims about how the other side will back down or will not as it has high military leverage. This is in starch contrast with previous academic literature on the subject which claims that if a mediator is neutral, they are credible to both sides [HAIG, 1984].

Finally, we assume that not all statements made during UNSC meetings are based on pure facts. Danny Danon, ambassador of Israel to the United Nations, states during the 8139th meeting of the UNSC[4]: *"By declaring the obvious — that Jerusalem is the capital of the State of Israel — President Trump was simply stating a fact. He hoped to encourage both sides to move forward at the negotiating table. But, once again, the Palestinians respond with endless rockets fired at our civilians"*. The research of [Hord, 2005] explains that Jerusalem was originally applied to a concept rather than a location, and that the capital was not located at the location currently named Jerusalem. As such, the statement of fact is questionable. The mentioning of rockets targeting civilians suggests to people that Israel is always at risk for attacks. With the statement *"Fear, then, may be the key that unlocks certain biases in cognition"*, [Arceneaux, 2012] explains how bias is used by politicians to persuade their audience to accept their agenda. He explains there are two main sorts of cognitive bias politicians love to use in their political arguments: loss aversion and in-group bias. In essence, both are popular methods to instill fear in the audience's thinking. Loss aversion touches upon the fear of losing something be it material or not. In-group refers to making you feel you, or more often them, not belonging. As is proven in neurobiology scientific work [Williams et al., 2007], if fear gets the upper hand, people are more willing to consider things they would have not originally supported. In this way, politicians can win a debate even when the counter argumentation was strong and completely accurate [Arceneaux, 2012].

2.3. SUMMARY

In this chapter we have looked at the structure of the UN, and positioned the role of the Security Council next to the other UN organs. We discussed some of its processes, recognized criticism, and prior suggested reform proposals. Next, we reviewed how machine learning techniques have been used in prior research areas. We looked at subjectivity detection,

[4]https://undocs.org/en/S/PV.8139

bias detection in legal court decision transcripts, and decision-making or analysis in political discourse, business meeting transcripts, social media, and an example of successful application in the psychiatric sector. We learned that the deep learning BERT model is a popular choice for this type of Natural Language Processing (NLP) tasks. Finally, we have analyzed bias in the context of political discourse, the UN, and touched upon the need for further cross-domain research to assess how bias affects political decision making.

3

RESEARCH

3.1. RESEARCH QUESTIONS

Our goal is to validate if it is possible to build computational models able to detect bias in the UN Security Council (UNSC) by leveraging software engineering and machine learning techniques. The main research question we put forward to achieve our goal is:

"How to build a set of data analytics models to detect and analyze bias in the UN Security Council?" (**RQ**).

To answer this question we split the main research question into five sub-research questions. The first thing we needed to do to be able and detect bias is to understand it in the context of the UNSC voting. This became our first question:

"What is biased veto voting in the UN Security Council?" (**SRQ1**)

To better understand the notion of such biased veto voting, we scheduled interviews with UN Subject Matter Experts (SMEs) and performed a data analysis on UNSC meeting transcripts and resolutions. For the data analysis to be possible there first needs to be enough data. Our next 2 questions were:

"What UN Security Council data is available to work with?" (**SRQ2**)

and

"What can be learned from a data analysis on the UN Security Council resolutions and meetings?" (**SRQ3**)

Our next research question evaluates if, given the data analyzed and the understanding we have acquired on bias, we can build a prototype of an intelligent machine that can predict which state will veto.

"Is it possible to build a computational model to predict veto voting using the current data?" (**SRQ4**).

Finally, we wondered how to control bias in the UN Security Council when it is detected. We can ideate about what should happen when we detect biased vetoes, but we believe it is more valuable to hear from subject matter experts about what they believe should happen when our intelligent machine detects vetoes, potentially biased and not cast in good faith. How should it be controlled, and by who? What should the resulting actions look like? We proposed an extra research question for this:

"Which control measures or actions could be considered when bias is detected?" (**SRQ5**).

For SRQ1 and SRQ5, we engaged the Research Ethics Committee (cETO)[1] before reaching out to anyone. The interview protocol used is added for reference in Appendix B.

Finally, we anticipated that by providing satisfactory answers to questions SRQ1 - SRQ5, our research can formulate an answer to the main research question RQ.

3.2. Research Method

Our research is a combination of Data Science and Design Science. As per a traditional Software Engineering approach, one of the first phases is requirements engineering. We typically do this by analysis of our environment (who are the actors, what are the problems we want to have solved, what is the best way to solve these, .. etc). Once the problem is understood, one or more iterations can follow to build a solution. For this research, the problem we try to solve is already well identified. The right solution by far is not.

We model our research questions towards a goal-oriented requirements diagram as shown in Figure 3.1. Each goal, other than the main goal, has been numbered and will be referenced as such further in the text.

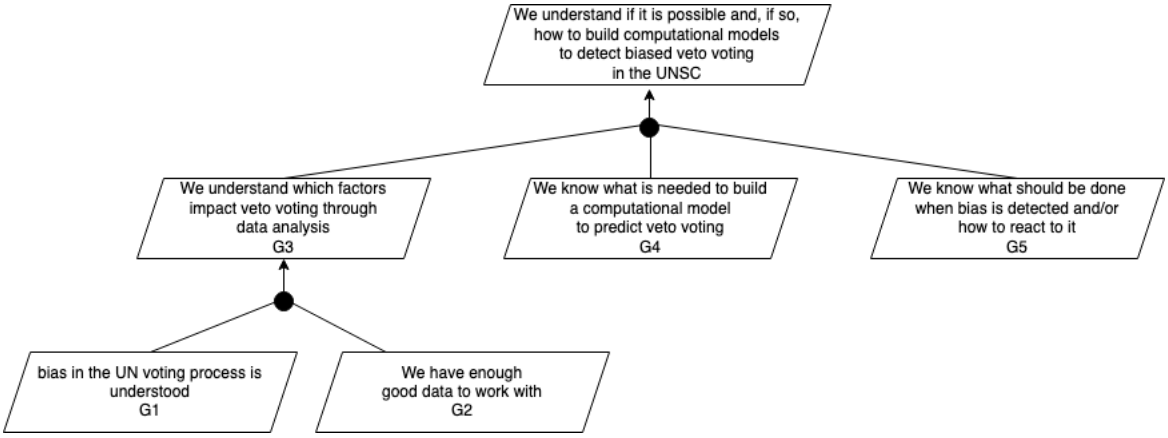

Figure 3.1: A Conceptual Goal Model to Express Our Research Question Goals

For ***"G1 - bias in the UN voting process is understood"***, we did more literature research about different types of bias, and what drives these, in the context of international relations. We also held interviews with independent Subject Matter Experts (SMEs) to evaluate

[1] https://www.ou.nl/research-ethics-committee-ceto

our hypotheses and get more in-depth insights. Furthermore, we reviewed UNSC meeting transcripts and searched for patterns and/or other interesting observable aspects that help to define a concrete definition of the type of bias we were looking for. Appendix D shows such an example UNSC meeting transcript.

In order to fulfill goal ***"G3 - We understand which factors impact veto voting through data analysis"***, we needed a good dataset to work with, which is depicted by goal ***"G2 - We have enough good data to work with"***. First, we researched if there is an existing dataset containing enough data for what we want to do. We needed at least an overview of the draft resolutions that were adopted, resolutions that were vetoed, the topic of the resolution discussed, and for the meetings of interest, the full transcript. We needed as much historical UNSC voting as possible. This was - and until today is - not readily available. We designed a data structure for this and populated it with data, that led to the first UNSC dataset. The data gathering was mainly done through web scraping. We spent significant cycles on this research and worked with the UN Digital Library "Dag Hammarskjöld Library" who confirmed and clarified that the data is not structured at all and comes from different legacy systems making it hard to combine. Some data is manually entered into online tables by the employees of the library. They also clarified that there are no meeting records recorded for resolutions that were not adopted. This makes finding the meeting transcript in which such resolution was covered a very complex job. The vetoed resolutions are however recorded in such previously mentioned online tables with complete information. This table has been scraped and the resulting content was added to the dataset of resolutions and transcripts. Upon inspection of meeting transcripts and resolution texts, we noticed that not all data is available as text. The UN Digital Library confirmed that meeting transcripts prior to 1994 were image scans. Some were OCRed but the quality of that is only as good as the original document was. Chapter 4 gives a complete overview of how the dataset was built and how it can be rebuilt.

Considering all this, we still have around 27 years of adopted, not adopted, or vetoed resolutions and the meetings in which these are discussed. A large enough dataset in which we can find answers to the proposed research questions. Not large enough we found out to do deep learning with as explained in chapter 7.

Once we understood what triggers a veto vote, we researched how to build a suitable machine learning model to predict a potential veto. Inspired by the work of [Pryzant et al., 2020], [Mosteiro et al., 2021], [Pinto et al., 2020], and the in section 2.2 mentioned versatility of the transformer-based BERT model, we also chose BERT fine-tuning for a classification task to achieve ***"G4 - We know what is needed to build a computational model to predict veto voting"***.

Lastly, to satisfy goal ***"G5 - We know what should be done when bias is detected and/or how to react to it"*** we searched for answers during the interviews with Subject Matter Experts (SMEs) and got their input on possible bias control measures and/or actions.

Before conducting the interviews, we first engaged with the Research Ethics Committee (cETO) to get their approval. This, to make sure we are fully compliant with the academic,

ethical, and legal requirements such as privacy and data protection. Some of the people we targeted for interviews are operating in high-classified and sensitive environments, so extra care and attention was given to this. The full interview protocol is available for reference in appendix B.

Our research is multi-disciplinary and our discussion of each discipline is subdivided into separate chapters. The results of each are discussed in the next chapters. While each chapter handles different aspects, the research in them is intertwined and has dependencies between them. As can be seen in the goal diagram in Figure 3.1, the availability and accuracy of the dataset are paramount. Similarly, goal G4 is not achievable if the exploratory data analysis answering goal G3 does not lead to accurate results. We do not have a separate chapter that validates our findings or discusses our validation methods. Our validation happens in each chapter directly and implicitly, part of the discipline researched. We argue that if the results from the different techniques and research methods used, lead to the same conclusions, it is a validation in itself. As is the fact that the final research question can be answered with a meaningful, proper substantiated answer. In summary, our knowledge and assumptions of the UNSC are validated by domain experts in chapter 6. Our data is validated by cross-checking manually, confirmed corrections by the UN itself in chapter 4, and our data analysis in chapter 5. The proposed deep learning prototype results are validated by accuracy reports in chapter 7.

4

DATA GATHERING

In this section, we describe our approach to achieve research goal ***"G2 - We have enough good data to work with"*** and answer research question ***SRQ2 - "What UN Security Council data is available to work with?"***.

We will first explain the complexities of gathering the required data and how we came to a working and repeatable process. We then describe the database design to store the data and explain our choices made. We continue to give an elaborate overview of the design and implementation strategies of the software built. Finally, we formalize an answer to the posed research question.

Having kept reusable science in mind from the beginning, all source code, steps to reproduce, etc. are available on GitHub[1].

4.1. DATA GATHERING PROBLEMS

The riskiest assumption of this research is that we have enough good data to work with. This took most of our time to get right and led to resolving some data inconsistency issues on the UN data backends.

We started by researching well-known datasets on the internet, but none were really what we needed. We found all the data we needed on the UN website, spread across hundreds of web pages. Knowing the data was effectively out there, we reached out to the UN Digital Library *"Dag Hammarskjöld Library"*. They clarified the data is not structured at all and comes from multiple different legacy systems, making it hard to combine. Lots of data is manually entered into online tables by employees of the library. This type of manual data entry is prone to errors as we have seen ourselves during our data validation process. They also clarified that there are no meeting records recorded for resolutions that were not vetoed but not adopted. This makes finding the meeting transcript in which such resolution was covered a very complex job. We met and discussed with the Digital Library at length and looked at several data exports to see what is there. We concluded, as corroborated by

[1] https://github.com/cvanlabe/MScThesisSE

the Digital Library, that the data we need for our research is not readily available. Since the data is there on the un.org website, we decided to go for web scraping. Figure 4.1 illustrates the process we built to link all different data sources together to come to the dataset we require.

We built a Python program to automate these steps. As can be seen in figure 4.1, the process starts by determining which years we are interested in. Without specifying any years, the program will try and fetch all the data from the very first meeting of the UN Security Council in 1946, all the way up until March 2020. This is an important date because that's when COVID-19 really had an impact on our daily lives, and changed the ways we lived and worked, the UN Security Council included.

Another important year is 1994. The first runs always stopped working at the year 1994. After troubleshooting, we found that 1994 was apparently a year of change in the UN. From that year onwards, the un.org URLs changed, content changed, and scanning methods also changed. As from 1994 web pages in the URL no longer end with *.html* but with *.htm*. Unfortunately, sometimes both exist. A reliable method had to be found for getting the right data at all times. Evaluating the year of the meeting to 1994 turned out to be the most reliable way. With regards to the content changes in 1994, the structure of the tables was altered. In 1994, they introduced an extra table column 'Press Release' which was not there before. The parser had to consider this. Finally, prior to 1994, the scanned and OCRed meeting transcripts, were not always well readable. This put a big limit on our dataset since text analysis on transcripts and resolutions prior to 1994 may not be reliable.

Our initial implementation was single-threaded, completing one record at a time. It was very slow and took several days to complete, especially if an error occurred during processing. The main process was made multi-threaded so the processing can go faster. This revealed that the UN has - as is expected for an organization of such size - multiple web servers, where sometimes one does not respond in time. A proper job queueing system with a retry mechanism was required. For this, we implemented a simple naive queue. This can easily be refactored to leverage a distributed queue using a broker like Apache Kafka[2], so multiple machines can download, parse, extract, and push data into the Database. For this research, we did not do this.

The number of connections made is significant since we are fetching a) the web page, b) the PDF of the meeting, c) the PDF of the resolution(s) discussed, and d) when a meeting lists a resolution as accepted, the PDF of the original draft resolution. From time to time we were getting *'503 Too many connections'* errors back during a large processing job. As the message indicates, it seemed to be triggered when too many requests were sent or when the requests were coming in too fast. We found that 10 workers were a good number that did not cause the *too many connections* error. To mitigate the too-fast requests a firewall or load balancer may be concerned with, a simple unintelligent *'backpressure'* step was added. Upon de-queueing a job, the system adds a random delay between 0 and 10 seconds. The user-agent is also randomized at each download to further mitigate being seen as a potentially hostile client.

[2]https://kafka.apache.org/

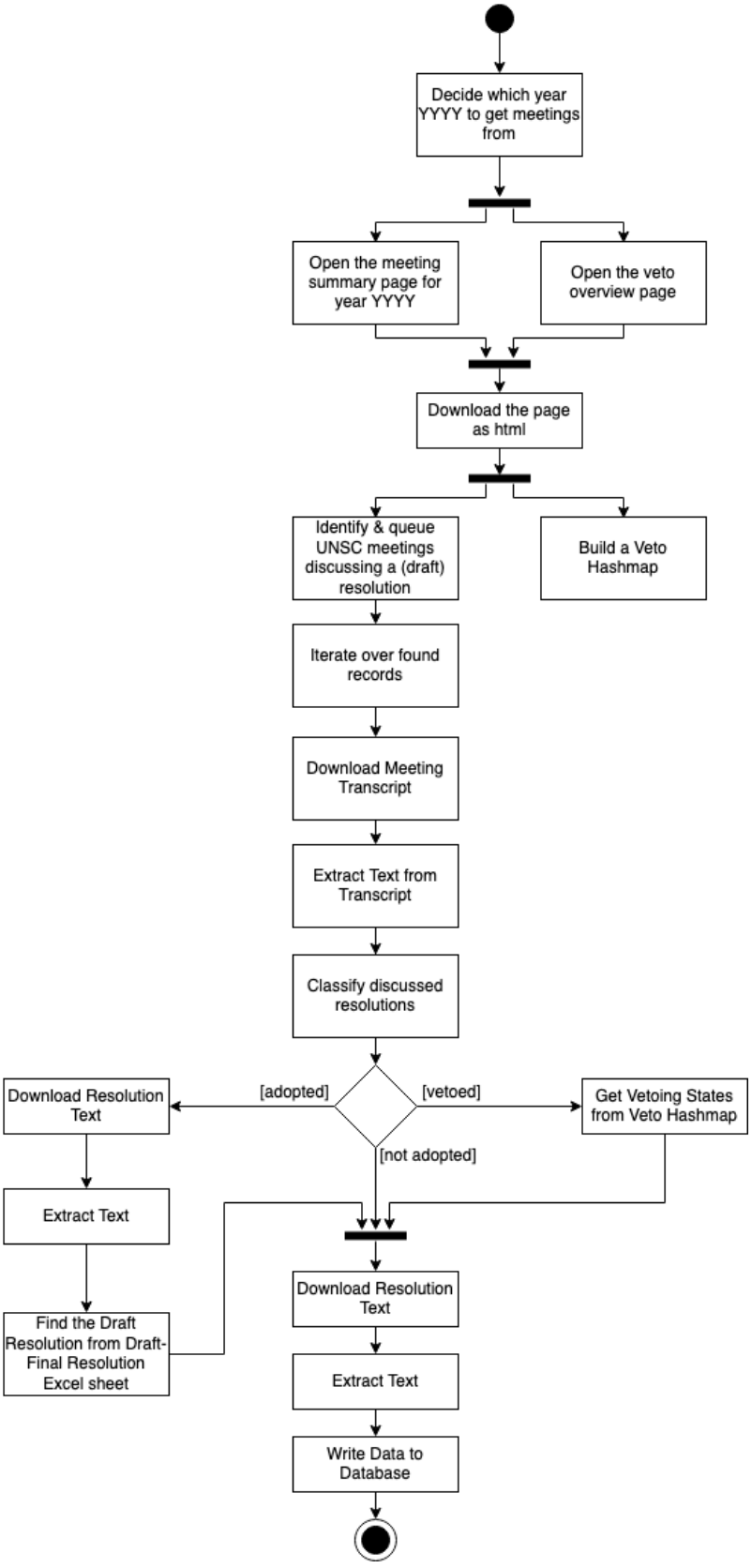

Figure 4.1: A Flow Diagram depicting the high-level data gathering process

The next challenge was inconsistencies in the (sometimes manually entered) data over time. A first example would be that in the veto table Russia is called both *'USSR'* and *'Russian Federation'*, depending on the year of the meeting. A normalizer was put in place to make sure that everywhere state names are used, they first go through that name normalizer.

In earlier years, draft resolutions were of the form *'S/X'* - *'S/XXXX'* where X denominates the n-th draft resolution. Later we see the UN has made that more structured by using the format *'S/YYYY/X'* - *'S/YYYY/XXXX'* where *'YYYY'* is the year in which the resolution was drafted, and *'XXXX'* the n-th resolution that year. On the UN web pages or exports, resolutions are not all available in a nice chronological order starting at one. This is an indicator of something that only became evident later in the data analysis process: not all draft resolutions make it to a UNSC meeting. The mismatch of possible formats was resolved by using regular expressions.

Another data inconsistency seen was when looking up the state(s) vetoing a resolution. The implemented lookup table is a HashMap built by parsing the UNSC Veto Overview page[3]. This is the only page that has the meeting record, the vetoed resolution, and the state(s) vetoing it. When the system finds in a meeting overview page an indicator that a veto was used in the meeting was, it looks at the HashMap as the single source of truth to know who cast the veto. Unfortunately, the resolutions did not always match. Errors were found and corrected by the UN Digital Library. In other cases, we came across resolutions with revisions, not consistently used across different web pages. As an example, meeting *S/PV.2686* discussed draft resolution *S/18087* according to the 1986 meeting overview page[4] whereas the veto table mentions *S/18087**.Rev1***. This causes the system to be unable to identify who vetoed *S/18087* since the HashMap is based upon that veto table, and the resolution revision is not a valid lookup key. Partial match searching was implemented for those times we have no match. If then there is still no match, there is a real data error. We encountered these kinds of errors, and the Digital Library corrected them happily.

The biggest source of errors was seen during the searching for draft versions of adopted resolutions. To clarify, when a draft resolution is accepted, it receives a new name of the form *'S/RES/XXXX'*. The UNSC meeting overview pages list either the accepted resolution format or a draft resolution format, not both. There is no table or immediate metadata available to find out what the original draft resolution is of an adopted resolution. The UN Digital Library however can provide an Excel export of draft resolutions that were adopted with their new adopted name. We contacted them and requested an export[5], from the beginning of times till today.

At the time of writing this document, we find the draft resolution at column B and the adopted resolution at column J in the Excel sheet. To try and be a bit future-proof, we

[3] https://www.un.org/depts/dhl/resguide/scact_veto_table_en.htm
[4] https://www.un.org/depts/dhl/resguide/scact1986_table_en.html
[5] How to request this is documented in the GitHub repository README.md

search the adopted resolution in all cells in the sheet. We use the *openpyxl*[6] library for this. Once found, we try to pick up the original draft resolution at column B of that row. We have seen a multitude of problems with this export:

- Adopted Resolutions missing
- Draft Resolutions missing
- Incorrect Year indications of Adopted Resolutions

The first two were fixed by means of email exchange with the UN Digital Library. Some are however not actual data issues. We learned that there are resolutions that get adopted without a draft. The third issue took a bit longer to surface and understand. As an example, when you would search for S/RES/2498(2019) there is no match. The Excel sheet had S/RES/2498(2018) instead. The year was incorrect. To overcome this we implemented another partial matching search which disregards anything coming after the resolution.

We sent in total over 1600 data issues to the UN Digital Library and while it took some time, they were happy to share with us they were able to fix and validate the data inconsistencies in their library system. We may have made their life hard at times, but in the end, it was a win-win situation.

4.2. Database Design

The database is modeled to the entities we have: UNSC meetings, resolutions, member states, and vetoes cast. The tables are designed in such a way that the columns capture unique entity properties relevant to our research domain, and facilitate structured data analysis for our research questions. It is important to consider and understand why we do not include voting information other than veto voting. As discussed earlier, voting information is only recorded when a resolution was either adopted, or vetoed. When it is not adopted, there is no detailed record of it. That means that we were technically limited in getting that data. Since we are interested primarily in the usage of vetoes, and the mitigation of them, we do not consider it a blocking point.

Please refer to figure 4.2 for the Entity Relation Diagram of our Database. We will now further explain our design choices.

As per the UN Digital Library's feedback, only the meeting in which a draft resolution is finally decided upon is recorded. They do not record all the meetings in which the resolution may have been considered or discussed. As such, there is a one-to-many relation between a meeting and a resolution. One meeting can have multiple resolutions discussed, but a resolution is only recorded in one meeting.

A meeting has its unique ID, the topic of discussion, the date and the year when the meeting took place, the full transcript of the meeting discussion, a URL to the online transcript, and - in our dataset - a redundant field which indicates whether or not a veto was used during a meeting. In a typical database design, you would not find such a field since

[6] https://openpyxl.readthedocs.io/en/stable/

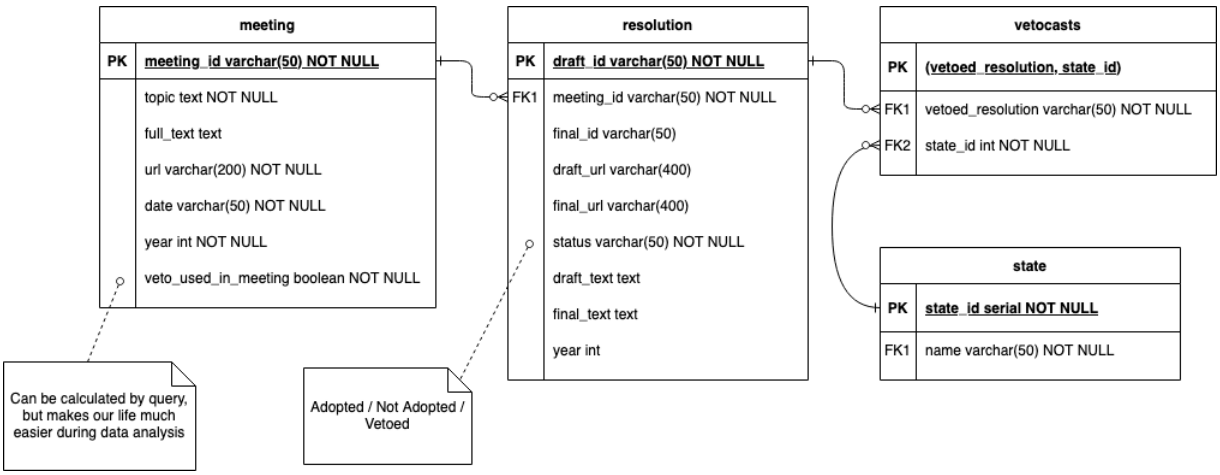

Figure 4.2: The Entity Relation Diagram of our Database

it can be calculated using queries. We deliberately chose to use it as it simplifies queries related to meetings with veto, making our life easier during the data analysis. This is a conscious design choice that allows us to find meetings where at least one veto was cast against a resolution without having to use subqueries or joins involving multiple tables.

A resolution has its unique draft id as the primary key, the meeting in which it was discussed, its final id in the case it became an adopted resolution, the applicable resolution texts, the year the resolution was drafted, links to the texts online, and their status after the meeting: adopted, not adopted, or vetoed. Such a resolution can be vetoed by any of the P-5 members, also at the same time. In other words, there is a many-to-many relation between resolutions and states with veto power. We introduced a junction table for this to convert this to two many-to-one relations.

4.3. Software Design

The data loader software uses an Object-Oriented design and leverages the Object-Relational Mapping (ORM) framework *SQLAlchemy*. In the earliest prototype we did not use an ORM and just used the strategy design pattern [Gamma et al., 1994] to delegate the handling with the database. This worked but led to unmaintainable code. The introduction of an ORM allowed us to map the different object properties directly to the Database model [Torres, 2014] defined earlier. This means that whenever a structural change is required to any of our objects, that change is limited to the relevant classes. No SQL queries need to be updated. This immediately brings the concept of coupling to mind. Different ORM frameworks support different integration patterns. SQLAlchemy supports both tight coupling and loose coupling [Torres, 2014]. The tight coupling is based on the Active Record architectural pattern [Torres, 2014] and can be seen as inheritance coupling. Loose coupling is achieved through the Mediator pattern using mapping objects. While loose coupling typically has the preference, we chose the simpler Active Record approach. Adding extra mapping objects did not seem worth the extra effort right now for the scope of this project. Figure 4.3 shows an excerpt of the class diagram limited to the used entities.

It is worth mentioning that the entity classes their *Base* class is dynamically created during

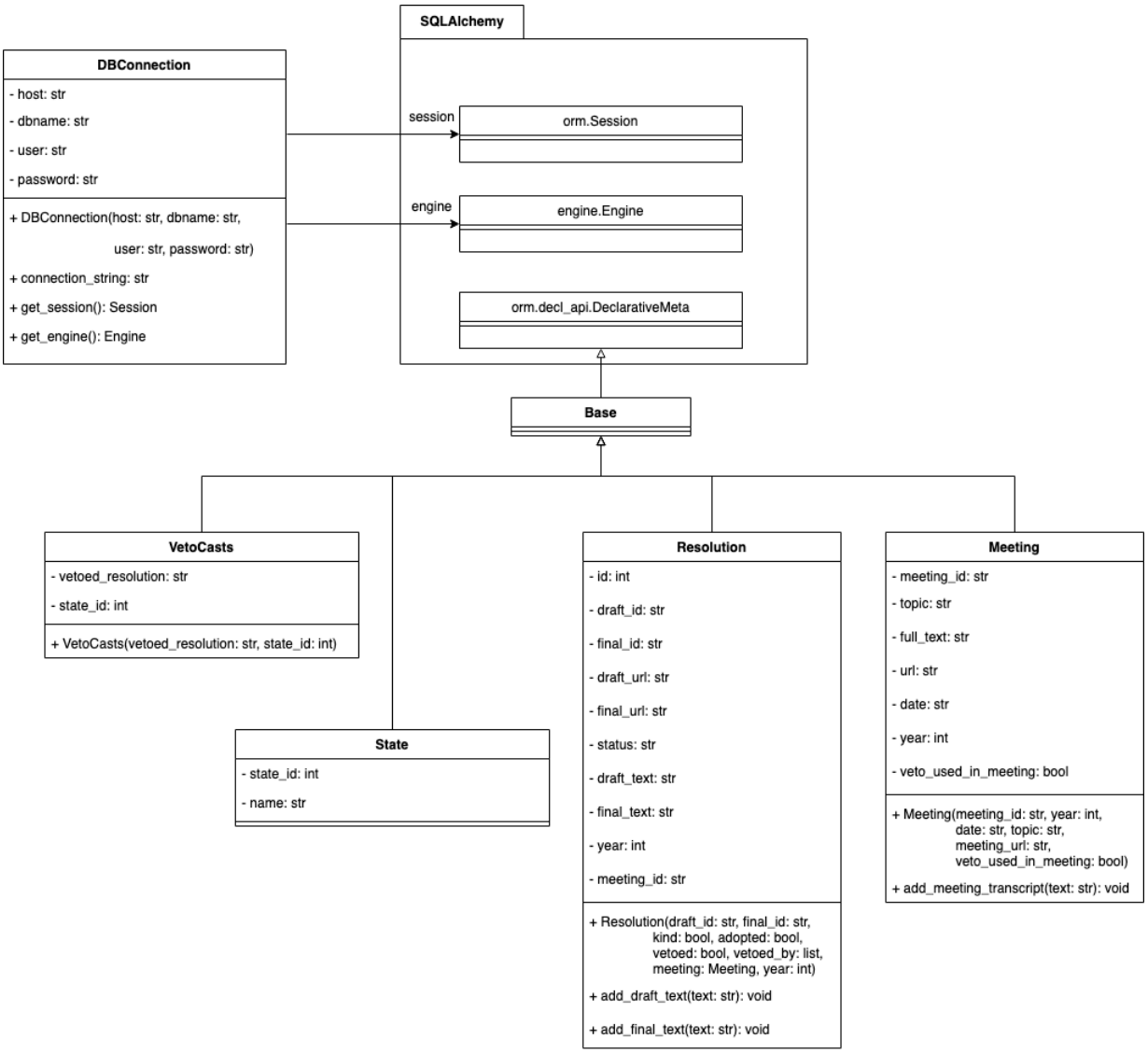

Figure 4.3: The different entities, inheritance coupled to the ORM

initialization in the *dbconnection.py* module:

```
from sqlalchemy.orm import declarative_base
...
Base = declarative_base()
```

The meta-programming involved is not shown in figure 4.3 for the sake of clarity in this report. While the entity classes list for each field the data types used for manipulation, these variables are actually of the type *sql.schema.Column*[7]:

```
from sqlalchemy import Column, Integer, String, UniqueConstraint, ForeignKey
...
class Resolution(Base):
    ...
    id = Column(Integer, primary_key=True)
    draft_id = Column(String)
    final_id = Column(String)
    ...
    meeting_id = Column(String, ForeignKey("meeting.meeting_id"))
    ...
```

SQLAlchemy allows these fields to be treated as their underlying data type. Refer to Appendix A, figure A.1, for a UML class diagram showing the mapping to this *Column* class.

The business logic that downloads the different pieces of information needed, parses, and extracts them into the right data structures, was the most complex part of the software. Figure 4.4 illustrates the different classes and how the main module of this application *load_unsc_meeting_data_to_db.py* uses them. Different concerns are separated into their own classes.

The first important class is the *HTMLDownloader* class. This is one of the most critical classes in the project to build the dataset. If the system cannot download the HTML pages from the un.org website, there is nothing it can do. Everything stops there. For the reasons mentioned earlier, these downloads tend to fail quite often. Since retrying is a common theme in this environment, a *JobQueue* which processes *Job*s was implemented. The JobQueue is a FIFO queue that processes a list of jobs using any function passed to it for processing. Unless specified otherwise, it will retry 20 times until it successfully processed a Job.

```
class JobQueue:
    ...
    def __init__(self, retries: int = 20) -> None:
        self.jobs: list = []
        self.processed: list = []
        self.failed: set = set()
        self.retries: int = retries
    ...
```

[7] https://github.com/sqlalchemy/sqlalchemy/blob/master/lib/sqlalchemy/sql/schema.py

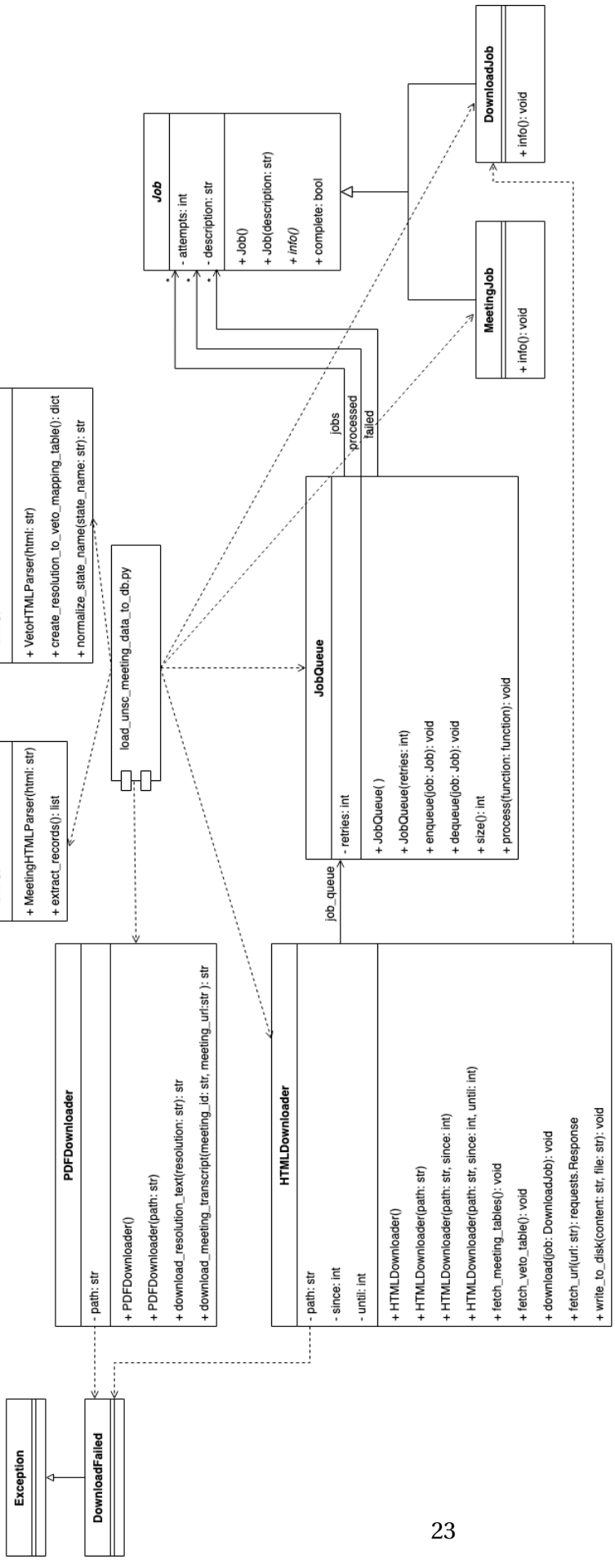

Figure 4.4: The business logic classes

The *HTMLDownloader* constructor (initializer) assumes the user wants to download the HTML files from the year 1946 up until 2021, unless specified otherwise. In the methods *fetch_meeting_tables()* and *fetch_veto_table()*, *DownloadJob* objects are created for each year an HTML page needs to be downloaded for and added to a *JobQueue*.

```
...
download_job = DownloadJob(
    url=url,
    dest_file=f"scact{year}_table_en.html",
    description=f"UNSC Meeting Table for Year ‘{year}‘",
)
self.job_queue.enqueue(download_job)
...
```

Finally, the specific *download()* method for downloading that type of data is passed as a parameter to the *JobQueue* its *process()* method for it to start downloading all the pages.

```
...
self.job_queue.process(self.download)
...
```

The same then happens for the veto table which is on its own webpage, irrespective of the year. Now the HTML is written to disk, the system needs to parse the HTML and extract the required fields from it. The *create_resolution_to_veto_mapping_table()* method in the *VetoHTMLParser* builds a HashMap - a dictionary in Python - of the cast vetoes. As explained in section 4.1 it is a mapping of the vetoed resolution to a list of member states.

Over the years, there have been different naming conventions used for what is today Russia. The system has a normalizer method *normalize_state_name()* to make sure the state names we see in the data set are uniform and always the same.

```
def normalize_state_name(self, state_name: str) -> str:
    """
    Takes a state name and normalizes it.

    :param state_name: The name of the state
    :return: The normalized name of the state
    """
    normalization_table = {
        "Russian Federation": "Russia",
        "USSR": "Russia",
    }

    # If the passed state_name is found in our mapping table,
    # we need to normalize it. Normalize and then return that result
    if state_name in normalization_table.keys():
        return normalization_table.get(state_name.strip())

    return state_name.strip()
```

The next step is to parse the HTML files that have the meeting overview per year in them. This is the task of the *MeetingHTMLParser* its *extract_records()* method. As mentioned before, the year 1994 was special, and the table structure changed as well. The code assesses the structure and determines how it should build a meeting record. A meeting record is also a HashMap of the form:

```
{
    "meeting_record": <meeting id>,
    "meeting_url": <url to the meeting info>,
    "date": <date the meeting was held>,
    "topic": <the topic of the meeting>,
    "outcome": <the outcome of the meeting, adopted, vetoed by .. ,
                not adopted, ...>,
}
```

Once the list of Meeting records is available, a *MeetingJob* is created for each record and enqueued in a *JobQueue*. Once all jobs are queued, the function that will do the heavy lifting for each *MeetingJob* is passed to the *JobQueue* its *process()* method. For the reasons also already explained in section 4.1 this job can take a long time. A *ThreadPoolExecutor* with a user-specified amount of workers is used to accelerate the processing. By default, we launch eight workers.

```
...
for year in range(from_year, end_year):
try:
    html = read_from_scratch(f"scact{year}_table_en.html")

    meeting_parser = MeetingHTMLParser(html)
    records: list = meeting_parser.extract_records()

    for record in records:
        ...
        # Make jobs from each record, and queue them.
        j = MeetingJob(record)
        job_queue.enqueue(j)
    ...
...
with concurrent.futures.ThreadPoolExecutor(
    max_workers = args.workers
) as executor:
    executor.submit(job_queue.process, process_job)
    ...
```

In the above code snippet you can see the *process_job()* function is passed to the *job_queue* its *process()* method. The *process_job()* is a complex function we will explain next. It is important that it completes as a whole atomically and not only partially. The reason for this is this function will create the required domain model entity instances in memory, to then finally commit the data as one transaction to the database. It is for this reason, the

downloading of PDFs is not in its own separate *JobQueue*. If the download fails, the entire *MeetingJob* should retry as a whole anyway.

The first thing the *process_job()* function does is extract the meeting record from the *MeetingJob* and create a *Meeting* object. It then tries to download the PDF of the meeting transcript. Once the PDF is written to disk, the PDF is opened and read into memory. We used the *PyMuPDF*[8] library for this as it behaved reliably in our testing and was able to read multi-column PDF text in a natural way without issues. Finally, the function adds the extracted text to the meeting object.

```
meeting = Meeting(
    meeting_id=meeting_record,
    year=year,
    date=date,
    topic=topic,
    meeting_url=meeting_url,
)

meeting_pdf_downloader = PDFDownloader(
    path=f"{MEETING_DOWNLOAD_FOLDER}{year}"
)
...
meeting_pdf = meeting_pdf_downloader.download_meeting_transcript(
    meeting_record, meeting_url
)

meeting_transcript = read_pdf(meeting_pdf)
meeting.add_meeting_transcript(meeting_transcript)
```

The code then analyzes the outcome field of a meeting record and searches for the resolutions discussed and what the outcomes were. In case a resolution id is seen in the format of an accepted resolution (*'S/RES/XXXX'*), a lookup is done in the UN Digital Library Excel export file to find the original draft resolution. For each resolution found, a *Resolution* object is created. The PDFs are downloaded, read, and the resulting text is added to the object as well. The data is then added to the database as a discrete transaction.

```
...
res = Resolution(
    draft_id=vetoed_res,
    final_id=None,
    kind=Resolution.DRAFT,
    adopted=False,
    vetoed=True,
    meeting=meeting,
    year=year,
)
```

[8] https://pymupdf.readthedocs.io/

```
    resolution_pdf = resolution_pdf_downloader.download_resolution_text(
        vetoed_res
    )

    draft_text = read_pdf(resolution_pdf)
    res.add_draft_text(draft_text)

    db_session.merge(res)
    ...
```

In the case of a vetoed resolution, the function also creates a new *VetoCasts* object for each vetoing member state before the database commit:

```
    ...
    for veto_voter in veto_voters:
        vetoing_state = (
            db_session.query(State).filter(State.name == veto_voter).first()
        )

        db_session.add(VetoCasts(vetoed_res, vetoing_state.state_id))
```

Thanks to the JobQueue implementation we can now support retrying a configurable amount of times a specific job. The atomic transactional commits to the database, assure that no data corruption will sneak in. If at any time the work related to a given meeting record fails more than what was configured as max-retry on the *JobQueue*, the program writes the failed entries to a pickle file it can later retry. It also writes to a text file researchers can use for troubleshooting what records are failing.

```
logger.info("%s jobs remaining unprocessed", job_queue.size())
logger.info("%s jobs failed to process", len(job_queue.failed))
logger.info("Failed jobs: %s", job_queue.failed)

# Save the failed jobs to a file for retry later
if len(job_queue.failed) > 0:
    pickle.dump(
        job_queue.failed,
        open(f"failed_records-{datetime.now().isoformat()}.p", "wb"),
    )

    with open(f"failed_records-{datetime.now().isoformat()}.txt", "a") as f:
        for record in job_queue.failed:
            f.write(f"{record.meeting_record}\n")
```

4.4. SUMMARY

In this chapter we wanted to find an answer to research question ***SRQ2 - "What UN Security Council data is available to work with?"***.

There was no dataset readily available that captures what we need from the UN Security Council operations: the meetings, resolutions, and voting data. While there are subsets of data exportable through the UN Digital Library, they are very complex to access and understand. Data in these exports are often unrelatable with other exports if the requested data is already available as such export. The UN Digital Library personnel spends a lot of time manually maintaining tables on the un.org website where the data is relatable. This manual data entry makes it unfortunately prone to error. We built software that scrapes the un.org website and captures the data to a relational database.

Using the software we built, there is now a usable dataset for data analysis and research goal ***G2 - We have enough good data to work with*** is achieved. The academic research community now also has a reusable tool to build a relational database digitizing the UN Security Council public data. The automated gathering process can also serve as a quality assurance process for the manually entered data across systems and the un.org website.

We hope our research software sets the stage for a lot more interesting future research work.

5

DATA ANALYSIS

In the previous chapter we discussed the software built to gather the data needed for data analysis. In this chapter we will try to address research goal ***G3 - "We understand which factors impact veto voting through data analysis"***. We wondered if it is always the same member states casting vetoes when a specific topic is discussed, and if there is any relation to sentiment. Sentiment, since in a UNSC meeting there are often long speeches, sometimes full of frustration and even disappointment. We wondered if it could be an (or the) indicator for an upcoming veto. We tried to find answers to these questions by doing an initial Exploratory Data Analysis (EDA) [Li Vigni et al., 2013]. We posed ourselves the following EDA questions:

- **EDAQ1:** Is there a correlation/trend between veto casters and the number of vetoes cast?
- **EDAQ2:** Is there a correlation between the length of a meeting discussion and a veto cast?
- **EDAQ3:** Is there a correlation between the used words in a meeting discussion and a veto cast?
- **EDAQ4:** Is there a correlation between a meeting topic and the use of veto (and by who)?
- **EDAQ5:** Is there a correlation between the sentiment in a meeting and the use of veto?
- **EDAQ6:** Is there a correlation between the bias [Benson and Kathman, 2014] suggest and the use of veto?
- **EDAQ7:** Is there a correlation between the used words in a resolution and the use of veto?
- **EDAQ8:** Is there a correlation between the sentiment in a resolution and the use of veto?

The EDA is done on the Security Council Meeting transcripts, and also on the resolution text. We will discuss each EDA Question (EDAQ) separately in the coming sections. The data analysis is done in Jupyter Notebooks[Sokol and Flach, 2021] using mainly the Pandas library[1] for easier data analysis and manipulation.

Where appropriate, sections are clarified with code snippets. To avoid too long lines in the document, the lines are broken across multiple lines. Some would be seen as invalid Python if interpreted like that. Please refer to the GitHub repository[2] to see the full details and code.

5.1. EDA ON UNSC MEETING TRANSCRIPTS

As a first step the database tables are converted into Pandas dataframes. A dataframe is a two-dimensional, size-mutable, potentially heterogeneous data structure where each row represents a record, and each column a feature of that record.

```
import os
import pandas as pd
from sqlalchemy import create_engine
from dotenv import load_dotenv

# Read the DB info and credentials from our .env file
load_dotenv("Database/database.env")
DB_HOSTNAME = os.getenv('POSTGRES_HOSTNAME')
DB_USERNAME = os.getenv('POSTGRES_USER')
DB_PASSWORD = os.getenv('POSTGRES_PASSWORD')
DB_NAME = os.getenv('POSTGRES_DB')

engine = create_engine(
    f'postgresql+psycopg2://{DB_USERNAME}:{DB_PASSWORD}@{DB_HOSTNAME}/{DB_NAME}',
    echo=False
)
meetings_df = pd.read_sql_table('meeting', con=engine)
resolutions_df = pd.read_sql_table('resolution', con=engine)
vetoes_df = pd.read_sql_table('vetocasts', con=engine)
states_df = pd.read_sql_table('state', con=engine)
```

The *meetings_df* dataframe shows there are *2435* meeting records processed, addressing *2498* resolutions.

As discussed in section 4.2, one meeting can discuss multiple resolutions, each potentially having a different outcome. Figure 5.1 illustrates this using UNSC meeting *S/PV.906* where three different resolutions were discussed. Draft Resolution *S/4523* was vetoed, *S/4519* was not adopted, and *S/4525* was adopted as resolution *S/RES/157(1960)*.

[1] https://pandas.pydata.org
[2] https://github.com/cvanlabe/MScThesisSE

```
meetings_and_resolutions_df.query('meeting_id == "S/PV.906"')[['meeting_id', 'draft_id', 'status', 'final_id']]
```

	meeting_id	draft_id	status	final_id
2296	S/PV.906	S/4523	vetoed	None
2297	S/PV.906	S/4519	not adopted	None
2298	S/PV.906	S/4525	adopted	S/RES/157(1960)

Figure 5.1: Multiple Resolutions Discussed in a UN Security Council Meeting

5.1.1. TEXT PRE-PROCESSING

Before we go into each EDA question, some questions will require the text to be pre-processed and cleaned. In this section we will summarize the steps taken to prepare the meeting transcript texts for further analysis.

Since what we are doing is Natural Language Processing or plain text analysis we needed to make sure that the texts used for our analysis are cleaned, in English language, and as uniform as possible. We discovered before in chapter 4 that texts from the OCRed transcripts before 1994 are not reliable. As such, any records dated before 1994 are dropped from our dataframe. To make sure that we only use English texts, we used the pre-trained language detection model FastText [Joulin et al., 2016a] [Joulin et al., 2016b]. Any transcript not recognized as valid English text is also dropped from the dataframe.

Each time we manipulate data in the data frame, we do not overwrite the existing feature but add the result as a new feature in the dataframe instead. This allows us to go back to a specific stage when needed or do comparisons before and after manipulations.

ONLY KEEP THE FEATURES (COLUMNS) AND ROWS WE ARE REALLY INTERESTED IN

```
pre_processed_df = meetings_and_resolutions_df.copy()

# Convert the year column to be numeric instead of string
pre_processed_df['year'] = pd.to_numeric(pre_processed_df['year'])

# Get rid of rows where we do not have the meeting transcript for...
pre_processed_df = pre_processed_df[~pre_processed_df.full_text.isnull()]

# Keep only the rows where the year is at least 1994
pre_processed_df = pre_processed_df[pre_processed_df.year >= 1994]
```

CLEANING OF TEXT

The main text of the UNSC meeting transcripts is surrounded by lots of metadata. Data like headers and footers, unique identification numbers, and some fixed structures that are unfortunately always varying in content. This noise is ideally cleaned up, but it is difficult to really find a good cleaning strategy that works for every transcript. Especially since over the years the format may have changed. Our cleaning approach was to first convert everything to lower case and then proceed to remove strings that show up often but do not immediately add value to the transcript. Examples are: *United Nations Security Council*, *Draft Resolution*, weekdays, months, ... etc.

```
import re

# Convert strings to lowercase
pre_processed_df['text_cleaned'] = pre_processed_df['full_text'].apply(
    lambda x: x.lower()
)

# Remove noise
pre_processed_df['text_cleaned'] = pre_processed_df['text_cleaned'].apply(
    lambda x: x.replace('united nations', '')
)
...
# Remove standalone numbers
pre_processed_df['text_cleaned'] = pre_processed_df['text_cleaned'].apply(
    lambda x: re.sub('\s\d{1,6}\s', '', x)
)
...
```

Expand Contractions

Contractions are where we mean to write *"Should have"* but use *"Should've"*. Or *"Don't"* for *"Do not"* and *"It's"* for *"It is"*. We do not want contractions and expand them back to their full form. For this we used the Python *contractions*[3] library.

Language Detection

The language used in the UN Security Council is English. Some OCRed text is not properly recognizable as English language. Seldomly there are resolutions transcribed not in English. As mentioned in the beginning of this section, we used the FastText language detection model, capable of recognizing 176 languages, on the data. If the model decides the text is not English, the record is deleted from the dataset.

```
import fasttext
pretrained_model = "lid.176.bin"
model = fasttext.load_model(pretrained_model)

langs = []
for sent in pre_processed_df['no_contraction_as_str']:
    lang = model.predict(sent)[0]
    langs.append(str(lang)[11:13])

pre_processed_df['lang'] = langs
pre_processed_df[['meeting_id','topic','lang','veto_used_in_meeting']].query(
    'lang != "en"'
)
```

It turns out that we do have a non-English transcript in our dataset as shown in figure 5.2. We remove the record from our data frame using the *drop()* method on the data frame.

[3] https://github.com/kootenpv/contractions

	meeting_id	topic	lang	veto_used_in_meeting
725	S/PV.4256	Croatia	ru	False

Figure 5.2: The FastText pre-trained model detecting a transcript in non-English language

```
pre_processed_df.drop(
    pre_processed_df[pre_processed_df.lang != "en"].index,
    inplace=True
)
```

TOKENIZE

Now that we have a properly recognized English text, cleaned up, without contractions, we can use a tokenizer to split each individual word into a token. We used *TextBlob*[4] its tokenizer on the *no_contraction_as_str* feature. This effectively converts a string of words into a list of words, or tokens.

```
from textblob import TextBlob

pre_processed_df['tokenized'] =
    pre_processed_df['no_contraction_as_str'].apply(
        lambda x: TextBlob(x).words
    )
```

REMOVE PUNCTUATION

The tokenizer is already removing some punctuation[5]. Here we removed any leftover punctuation from our data completely. For this, the *strings* module is used. We add a feature storing the list of words that are not seen as punctuation.

```
import string

pre_processed_df['no_punctuation'] = pre_processed_df['tokenized'].apply(
    lambda x: [word for word in x if word not in string.punctuation]
)
```

REMOVING STOP-WORDS

Stopwords are those words and that do not add (much) meaning to a sentence. In the English language common stopwords include *"you, he, she, in, a, has, are, ... etc"*. They are also removed from the text.

The NLTK stopwords library was used for this task. First, a set is made of English stopwords. Second, the words that are not in that set, the not stop-words, are stored in a new feature *"no_stopwords"* list.

[4] https://textblob.readthedocs.io
[5] https://textblob.readthedocs.io/en/dev/_modules/textblob/tokenizers.html

```
from nltk.corpus import stopwords

stop_words = set(stopwords.words('english'))

pre_processed_df['no_stopwords'] = pre_processed_df['no_punctuation'].apply(
    lambda x: [word for word in x if word not in stop_words]
)
pre_processed_df.head()
```

LEMMATIZATION

As a final step for our data cleaning, we reduce the number of tokens we have to work with to the minimum required. We do this by transforming the words we have to their lemma. The lemma is the root of the word [Priyadarshini et al., 2020]. Different words can have the same meaning. By lemmatizing words, we convert each word to its root. Another technique that does the same is stemming. Lemmatizing achieves better results because it uses word context [Priyadarshini et al., 2020]. We again used the *TextBlob* library to do this.

```
from textblob import Word

pre_processed_df['lemmatized_text'] = pre_processed_df['no_stopwords'].apply(
    lambda x: [Word(word).lemmatize() for word in x]
)
```

```
0       [situation, middle, east, report, secretary-ge...
1       [situation, middle, east, situation, middle, e...
2       [situation, central, african, republic, report...
3       [peacekeeping, operation, peacekeeping, operat...
4       [situation, middle, east, report, secretary-ge...
                              ...
1896    [portugal, sir, john, weston, united, state, a...
1898    [argentina, namibia, sir, jeremy, greenstock, ...
1899    [argentina, namibia, united, state, america, s...
1903    [argentina, brazil, djibouti, france, nigeria,...
1904    [japan, portugal, united, state, america, situ...
Name: lemmatized_text, Length: 1635, dtype: object
```

Figure 5.3: Fully cleaned & tokenized text for further data analysis

The original meeting transcripts are now cleaned into sets of tokens to do further analysis with and answer our next EDA Questions.

5.1.2. EDAQ1 - VETO CASTER ANALYSIS

Our first EDA question **EDAQ1** is an analysis to better understand who are the main veto voters and how many vetoes do we have in the dataset.

The Pandas library allows us to query dataframes like one would do with SQL tables. The query *meetings_df.query('veto_used_in_meeting==True')* shows that there are *131* UNSC meetings in which at least one veto was cast. We remind the reader the *'veto_used_in_meeting* field was added to easily find meetings with at least one veto as explained in section 4.2

where we discussed the database design.

The number of vetoes used can be counted using *vetoes_df.count()*. There are *167* recorded veto votes in our dataset. While the vetoes by themselves are interesting, it is more interesting to know who vetoed what resolution. To know this, the *vetoes_df* and the *states_df* dataframes can be merged together using the Pandas dataframe *merge()* method.

```
vetoes_w_names_df = vetoes_df.merge(
    states_df,
    how="inner",
    on="state_id"
)
```

Our first EDA question **EDAQ1** was answered by plotting the number of vetoes per permanent member over the years into a bar chart. Figure 5.4 shows that the USA and Russia are the leaders when it comes to veto usage. The USA leads with 70 vetoes, Russia comes in second with 53, in stark contrast with France and China who used their veto only 11 and 12 times respectively in the 75 years the UNSC exists.

```
vetoes_w_names_df.groupby('name').count()['vetoed_resolution'].iplot(
    kind='bar',
    yTitle='# Resolutions Vetoed',
    linecolor='black',
    opacity=0.8,
    title='Number of Vetoes Cast by Permanent Members over the years',
    xTitle='Permanent UNSC Members'
)
```

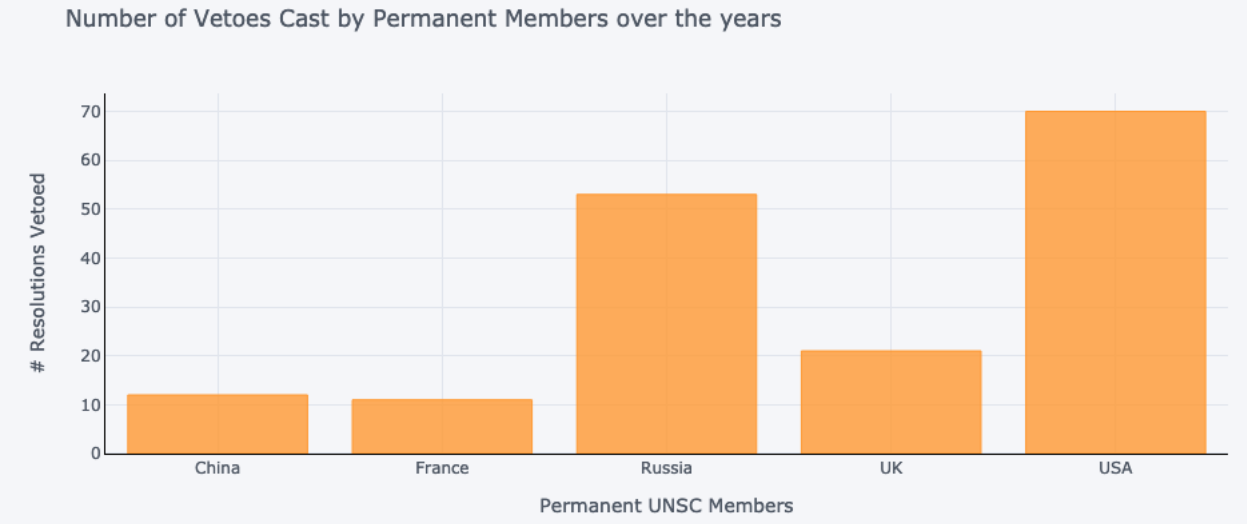

Figure 5.4: An overview of the number of veto votes cast per permanent UNSC member (1946 - 2020)

5.1.3. EDAQ2 - VETO BY WORD COUNT

As explained in chapter 2, a veto vote does not have to be defended or explained. Yet usually, the different member states will give their viewpoint on the topic discussed. We assume that most vetoed resolutions spark longer speeches compared to those without veto because of defensive argumentation, possible outrage, or other stakeholder concerns. A separate feature is added to our data frame for the amount of words in the cleaned-up text.

```
pre_processed_df['lemmatized_text_word_count'] =
    pre_processed_df['lemmatized_text'].apply(
        lambda x: len(x)
    )
pre_processed_df.query(
    'veto_used_in_meeting==True'
)['lemmatized_text_word_count'].describe()
```

We first take a look at meetings where at least one veto was used. Table 5.1 shows the word count for those meetings. Table 5.2 shows the word count data for the meetings where no veto was exercised.

count	42.000000
mean	3390.166667
std	1739.853469
min	461.000000
25%	1935.750000
50%	3165.500000
75%	4694.000000
max	8141.000000

Table 5.1: Statistical information for word count in meetings with a veto

count	1593.000000
mean	1472.829881
std	3209.444371
min	0.000000
25%	124.000000
50%	202.000000
75%	1267.000000
max	32044.000000

Table 5.2: Statistical information for word count in meetings without a veto

When we compare tables 5.1 and 5.2 our assumption seems confirmed. The average number of words in a non-veto meeting is less than half the amount compared to the number of words in a veto meeting. However, there is at least one meeting without a veto which reached 32044 words. If we look for meetings that count more words than the maximal

word count from meetings with veto, we find 56 meetings with a lot of speech, despite the lack of veto usage.

```
print(
    f"Number of meetings without veto having more words than the max
    amount of words in meetings in meetings with veto:
        {
         pre_processed_df.query(
            'lemmatized_text_word_count>8141'
         )['meeting_id'].count()
        }"
)
```

Number of meetings without veto having more words than the max amount of words in meetings with veto: 56

Some of these meetings (eg: S/PV.8649, S/PV.8199, S/PV.8423, ..) were reviewed to understand why they are so much longer. We found that the Security Council invites representatives of other states, relevant to the discussion, for some topics. In the example of S/PV.8649, representatives of 72 other states were invited to join the *"Women and Peace and Security"* conversation.

Since these are 56 Meetings out of a total of 1635 in scope in our dataset (after 1994) we consider them as outliers. Considering this, it shows the majority of the meeting transcripts without veto have fewer words than the ones with a veto. As such, we conclude for **EDAQ2** there is some correlation between word count and the use of vetoes in a UNSC meeting.

5.1.4. EDAQ3 - Veto by Word Frequency

For this EDA question we investigate whether there is a relation between the words used in meetings with a veto or not. We look at the top 100 most commonly used words in the meetings with and the meetings without veto casts and render them in word clouds to get a graphical impression of which words are most popular when a veto is or is not used. The larger the word, the more common it is used. The resulting word clouds can be seen in figures 5.5 and 5.6.

```
words_in_veto_meetings = pre_processed_df.query(
                            'veto_used_in_meeting==True'
                         )['lemmatized_text']
words_in_non_veto_meetings = pre_processed_df.query(
                            'veto_used_in_meeting==False'
                        )['lemmatized_text']

allwords_in_veto_meetings = []
for wordlist in words_in_veto_meetings:
    allwords_in_veto_meetings += wordlist

allwords_in_non_veto_meetings = []
```

```
for wordlist in words_in_non_veto_meetings:
    allwords_in_non_veto_meetings += wordlist
```

The frequency of each word is then taken using the nltk.probability FreqDist class to generate a word cloud:

```
from nltk.probability import FreqDist
from wordcloud import WordCloud, ImageColorGenerator
import matplotlib.pyplot as plt

mostcommon = FreqDist(allwords_in_veto_meetings).most_common(100)

wordcloud = WordCloud(
                background_color='white'
            ).generate(
                ' '.join(
                    dict(mostcommon)
                )
            )
fig = plt.figure(figsize=(10,10), facecolor='white')
plt.imshow(wordcloud, interpolation="bilinear")
plt.axis('off')
plt.title('Top 100 Most Common Words in Meetings with Veto', fontsize=32)

plt.tight_layout(pad=0)
plt.show()
```

The output of figure 5.5 is thought-provoking. Judging by the size of the words it shows that Syria and Palestine are popular veto targets. Without background knowledge, one can deduce by just looking at this word cloud that whenever there is a resolution concerning Syria, Palestine, Israel, there will be a veto. The usage of Named Entities (NE) is also in stark contrast when compared to figure 5.6. The word cloud of meetings without veto does not list one particular state. Only the African region. Following [Benson and Kathman, 2014] calling out specific named parties (in resolutions) as bias, we can clearly see the presence of bias against specific targeted groups of people.

The veto word cloud additionally shows a high frequency of the words *weapon, chemical, terrorist, Arab, ... etc.* which indicate more negative bias. Looking at figure 5.6 again, the most common words are more generic.

As a final answer to the **EDAQ3** question, we can conclude there is a strong correlation between used words in a meeting discourse and the usage of veto. Based on the data in the two word clouds, the second word cloud keywords represents the UN Security Council its primary mission of peacekeeping. The first one suggests the issues leading to blocking that primary mission through veto.

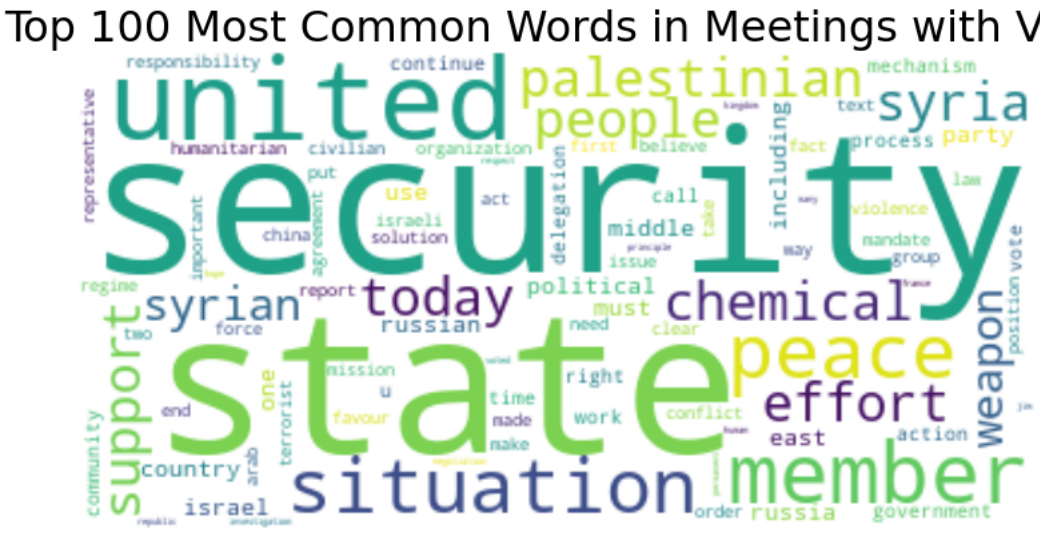

Figure 5.5: Word Cloud of the Top-100 Most Common Words in Meetings with Veto

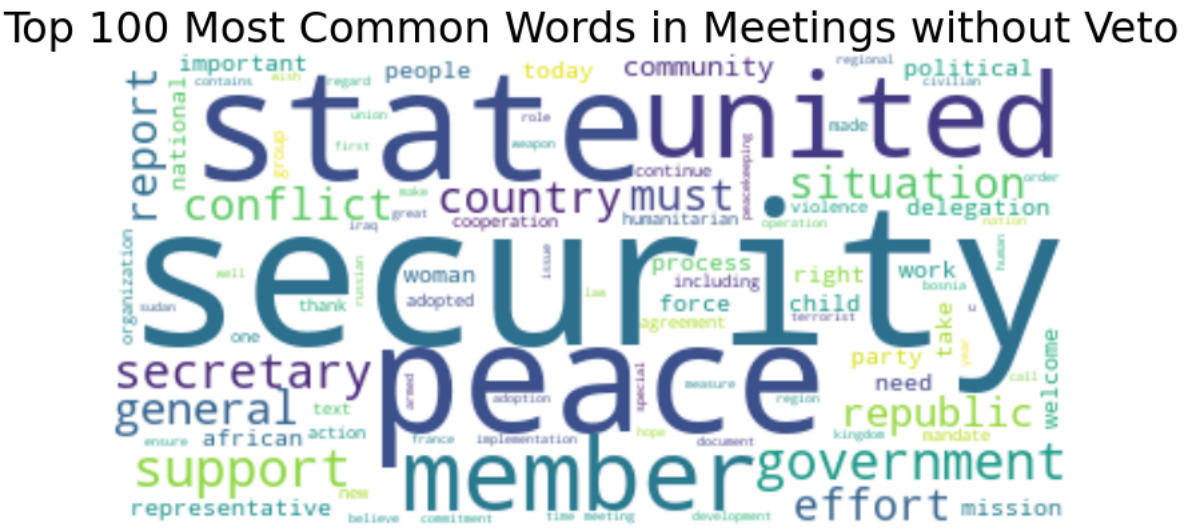

Figure 5.6: Word Cloud of the Top-100 Most Common Words in Meetings without Veto

5.1.5. EDAQ4 - VETO BY MEETING TOPICS

Our dataset contains the topic discussed in each UNSC meeting. In this EDA question, we analyze whether a specific topic can tell us something about the usage of veto or not. First, the list of topics is split into 2 different sets. A set of unique topics discussed in meetings with a veto, and a set of unique topics discussed in meetings without a veto. By subtracting these 2 sets from one another, we are left with topics that are only handled in one of each.

```
# A set of unique topics discussed in meetings with veto
topics_in_veto_meetings = set(
                            pre_processed_df.query(
                                'veto_used_in_meeting==True'
                            )['topic_region']
                          )

# A set of unique topics discussed in meetings without veto
topics_in_non_veto_meetings = set(
                                pre_processed_df.query(
                                    'veto_used_in_meeting==False'
                                )['topic_region']
                              )

# Apply Set Theory: subtract the non_veto_meeting topics
# from the veto_meeting topics to be left with topics only
# handled in veto meetings and vice versa.
list_of_veto_meeting_topics = '\n - '.join(
    topics_in_veto_meetings - topics_in_non_veto_meetings
)
list_of_non_veto_meeting_topics = '\n - '.join(
    topics_in_non_veto_meetings - topics_in_veto_meetings
)
```

The resulting output tells us that a lot of topics are discussed in meetings that have had both vetoed and non-vetoed resolutions. It also tells us that - between 1994 and 2021 according to our dataset - resolutions related to 5 topics have always been vetoed without exception:

- the Bolivarian Republic of Venezuela
- the Middle East (Syria)
- Myanmar
- Peace and security — Africa (Zimbabwe)
- Letter dated 28 February 2014 from the Permanent Representative of Ukraine to the United Nations addressed to the President of the Security Council (S/2014/136)

The last one can most likely be ignored since it is quite specific, whereas multiple meetings have been held around the topic of Syria.

To better understand who is casting a veto on what topic, dataframe *all_data_vetoed_df* is merged into our pre-processed data frame.

```
pre_processed_with_veto_info_df = pre_processed_df.merge(
    all_data_vetoed_df,
    how = "inner",
    left_on = [
        "draft_id",
        "final_id",
        ...
        "draft_id",
        "status",
        "meeting_id"
    ],right_on = [
        "draft_id",
        "final_id",
        ...
        "vetoed_resolution",
        "status",
        "meeting_id"
    ]
)

pre_processed_with_veto_info_df = pre_processed_with_veto_info_df.merge(
    states_df,
    how = "inner",
    on = "state_id"
)

groups = pre_processed_with_veto_info_df.groupby(
                                            'topic_region'
                                        )[[
                                            'topic_region',
                                            'name',
                                            'year'
                                        ]]
for key,value in groups:
    group = groups.get_group(key)
    print(group[['topic_region','name', 'year']])
    print("")
```

This gives another interesting insight: between 1994 and 2021, no P-5 members other than the USA, China, and Russia have used their veto power. An overview can be seen in table 5.3. It also paints a clear picture of which political allies exist between states within the UNSC and also towards the outside world.

Topic	Vetoing State	Veto Times
Bosnia and Herzegovina	USA	1
Bosnia and Herzegovina	Russia	1
Cyprus	Russia	1
Georgia	Russia	1
Guatemala	China	1
Letter dated 28 February 2014 from the Permanent Representative of Ukraine to the United Nations addressed to the President of the Security Council (S/2014/136)	Russia	2
Middle East	Russia	1
Middle East	China	1
Middle East Situation	Russia	1
Middle East Situation	China	1
Middle East Situation - Syria	Russia	1
Middle East Situation - Syria	China	1
Middle East situation, including the Palestinian question	USA	10
Myanmar	Russia	1
Myanmar	China	1
Peace and security — Africa (Zimbabwe)	Russia	1
Peace and security — Africa (Zimbabwe)	China	1
The former Yugoslav Republic of Macedonia	China	1
the Bolivarian Republic of Venezuela	Russia	1
the Bolivarian Republic of Venezuela	China	1
the Middle East	Russia	7
the Middle East	China	2
the Middle East (Syria)	Russia	1
the Middle East (Syria)	China	1
the Middle East, including the Palestinian question	USA	2
the former Yugoslavia	Russia	1
the occupied Arab territories	USA	2

Table 5.3: Overview of topics and the vetoing state between 1994 and 2021

EDA question **EDAQ4** can now be answered. We observe a strong correlation between a given topic and whether a given UNSC permanent member will use its veto power.

5.1.6. EDAQ5 - VETO BY SENTIMENT

The last thing we wanted to research with regards to the UNSC meeting transcripts was whether we could see a relation between the sentiment during speeches and with the usage of veto. Specifically, whether positivity versus negativity, and objectivity versus subjectivity of a speaker can be linked to a cast veto.

We have once more used the *TextBlob*[6] library for its ease of use and popularity for NLP use-cases. The library can return a polarity score and a subjectivity score. The polarity score is a float within the range [-1.0, 1.0] where 1 is positive, and -1 is negative. The subjectivity is a float within the range [0.0, 1.0] where 0.0 is very objective and 1.0 is very subjective.

To start, we convert the list of lemmatized tokens from section 5.1.1 back to a string for sentiment analysis and store it as a separate feature in our data frame.

```
pre_processed_df['lemmatized_text_as_str'] = [
    ' '.join(map(str, l)) for l in pre_processed_df['lemmatized_text']
]
pre_processed_df['lemmatized_text_as_str']
```

The TextBlob sentiment property returns a namedtuple of the form Sentiment(polarity, subjectivity). They are also stored as new features in the data frame.

```
pre_processed_df['sentiment_polarity'] =
    pre_processed_df['lemmatized_text_as_str'].apply(
        lambda x: TextBlob(x).sentiment.polarity
    )

pre_processed_df['sentiment_subjectivity'] =
    pre_processed_df['lemmatized_text_as_str'].apply(
        lambda x: TextBlob(x).sentiment.subjectivity
    )
```

There were two meetings that were considered both of negative sentiment and subjective. They were both around the same topic, not vetoed.

	meeting_id	topic	veto_used_in_meeting	sentiment_polarity	sentiment_subjectivity	year
229	S/PV.6885	International Tribunal - Rwanda	False	-0.104444	0.515556	2012
599	S/PV.6694	International Tribunal — Rwanda	False	-0.025333	0.522667	2011

Figure 5.7: UNSC Meetings marked as low sentiment and high subjectivity

Next, we look at the sentiment distribution for both polarity and subjectivity. A histogram helps us to get insights in a more visual way.

[6] https://textblob.readthedocs.io

```
import matplotlib.pyplot as plt

plt.figure(figsize=(8,4))
plt.margins(0.02)
plt.xlabel('Sentiment (Polarity)')
plt.ylabel('Frequency')
plt.hist(pre_processed_df['sentiment_polarity'], bins=50)
plt.title('Sentiment Polarity Distribution')
plt.show()
```

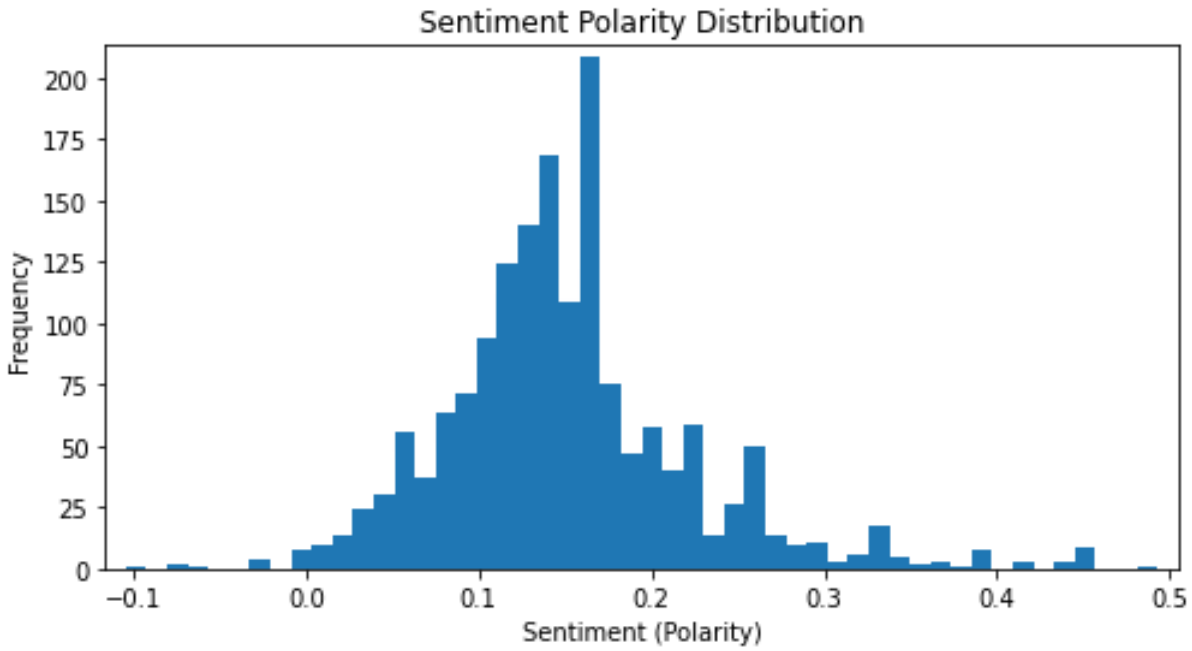

Figure 5.8: Sentiment Polarity Distribution

The histogram of figure 5.8 indicates that the majority of the UNSC meetings are mostly neutral. There is no outspoken negative or positive sentiment across the analyzed texts in our dataset. The histogram in figure 5.9 gives an overview of the subjectivity distribution. It indicates that the majority of the UNSC meetings are nearing the 0.5 midpoint of the subjectivity scale. Most of the analyzed meetings are still more leaning to the objective side.

We now take a look at the polarity and subjectivity for those meetings with veto and those without veto to evaluate if there is any relation between them.

```
...
plt.hist(pre_processed_df.query(
    'veto_used_in_meeting == True')['sentiment_polarity'],
    bins=50
)
...
```

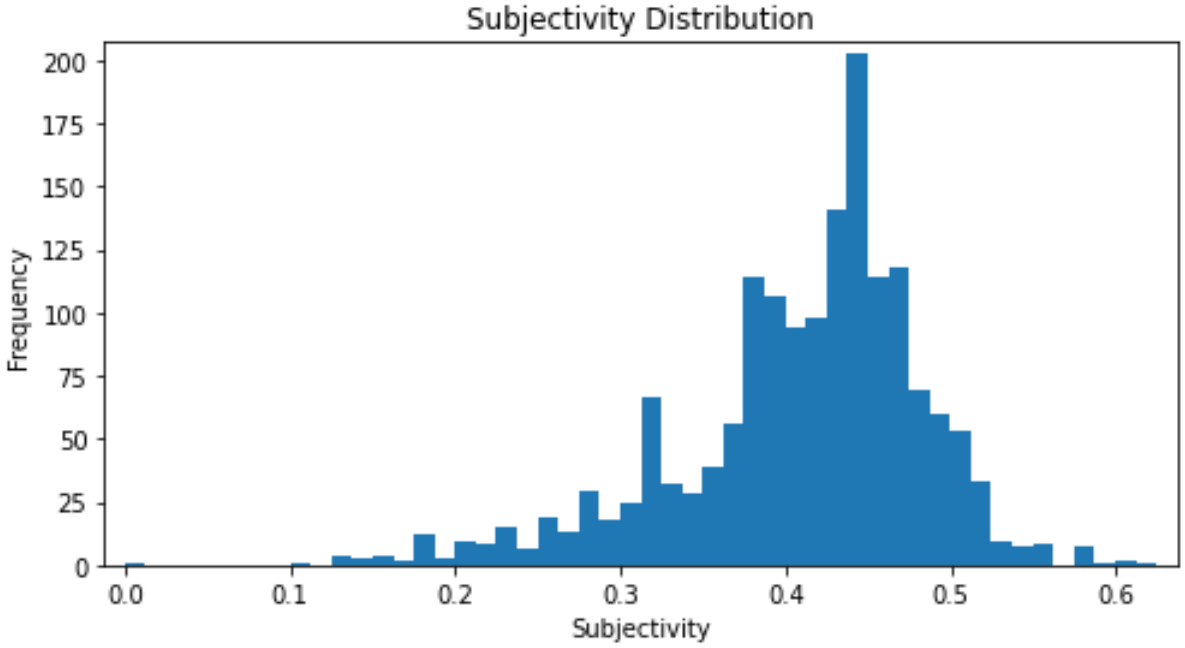

Figure 5.9: Sentiment Subjectivity Distribution

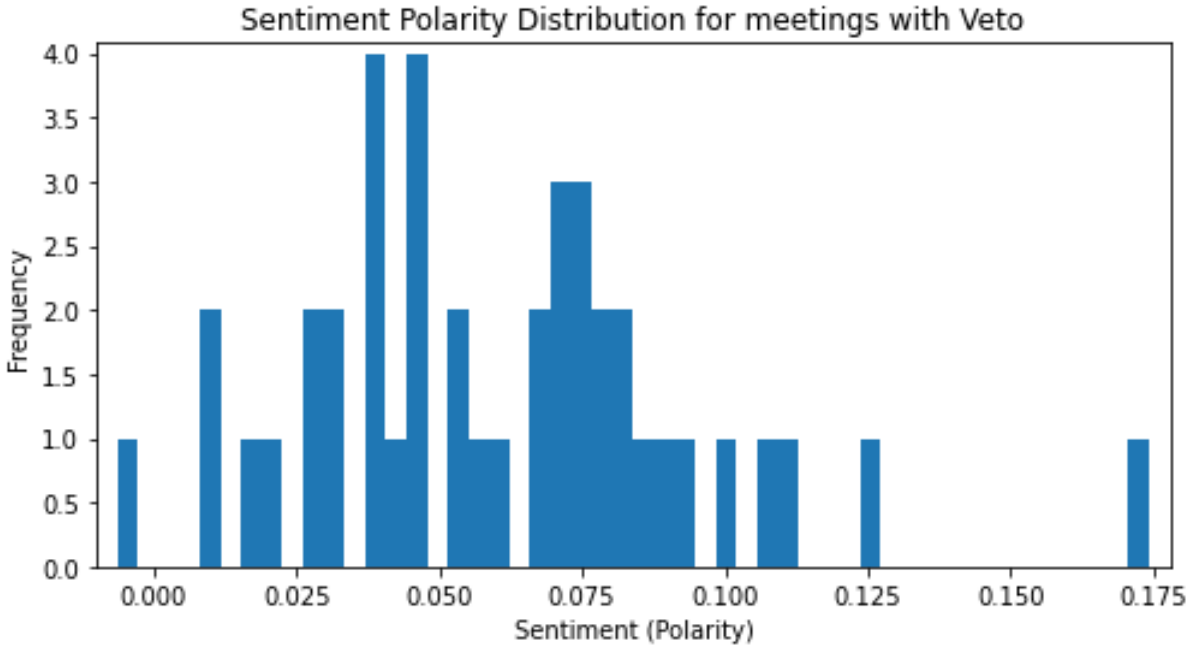

Figure 5.10: Sentiment Polarity Distribution for meetings with Veto

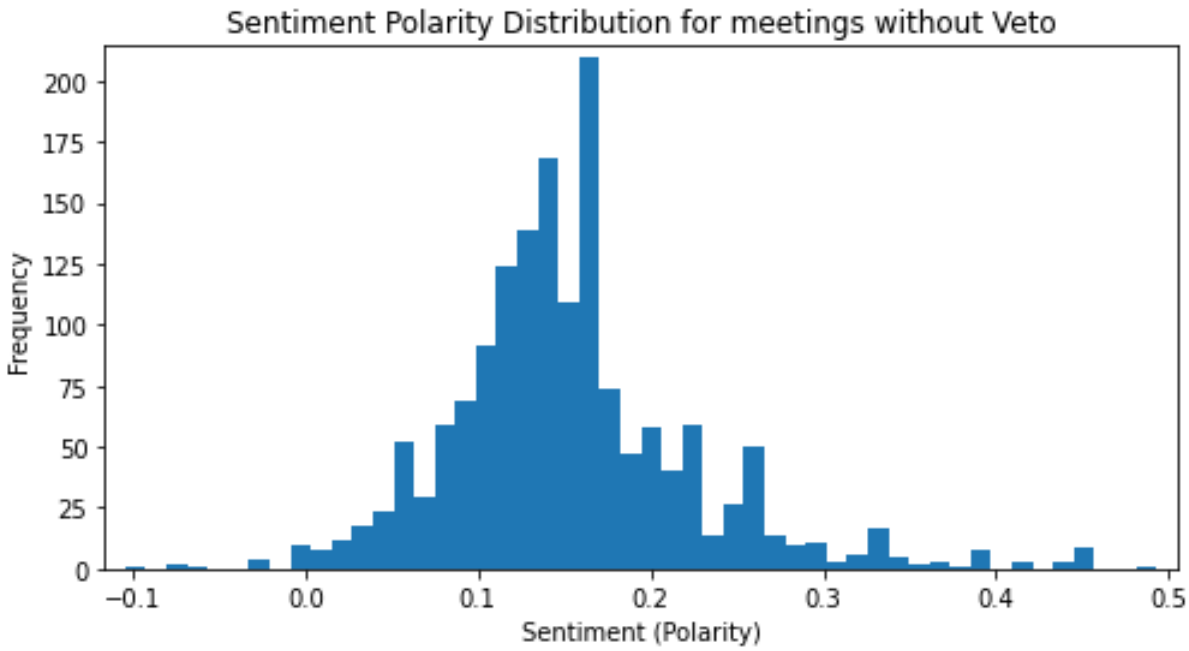

Figure 5.11: Sentiment Polarity Distribution for meetings without Veto

The histograms in figures 5.10 and 5.11 tell us the meetings where a veto was cast use mostly neutral language, whereas for meetings without veto, there is a slight increase in positivism. Also interesting is that negative sentiment seems to show up more in meetings where no veto was cast. This is harder to see on the histogram but confirmed in a pure numerical form presented below.

```
meetings_with_veto_negative = pre_processed_df.query(
    'sentiment_polarity < 0 and veto_used_in_meeting == True'
)['meeting_id'].count()

print(
    f'Number of meetings with negative sentiment where a veto was used:
    {meetings_with_veto_negative}'
)

meetings_without_veto_negative = pre_processed_df.query(
    'sentiment_polarity < 0 and veto_used_in_meeting == False'
)['meeting_id'].count()

print(
    f'Number of meetings with negative sentiment where a veto was NOT used:
    {meetings_without_veto_negative}'
)

meetings_with_veto_positive = pre_processed_df.query(
    'sentiment_polarity >= 0 and veto_used_in_meeting == True'
)['meeting_id'].count()
```

```
print(
    f'Number of meetings with positive sentiment where a veto was used:
    {meetings_with_veto_positive}'
)

meetings_without_veto_positive = pre_processed_df.query(
    'sentiment_polarity >= 0 and veto_used_in_meeting == False'
)['meeting_id'].count()

print(
    f'Number of meetings with positive sentiment where a veto was NOT used:
    {meetings_without_veto_positive}'
)
```

Number of meetings with negative sentiment where a veto was used: 1
Number of meetings with negative sentiment where a veto was NOT used: 13
Number of meetings with positive sentiment where a veto was used: 41
Number of meetings with positive sentiment where a veto was NOT used: 1580

The same analysis was done for objectivity and subjectivity with similar interesting interesting outcomes.

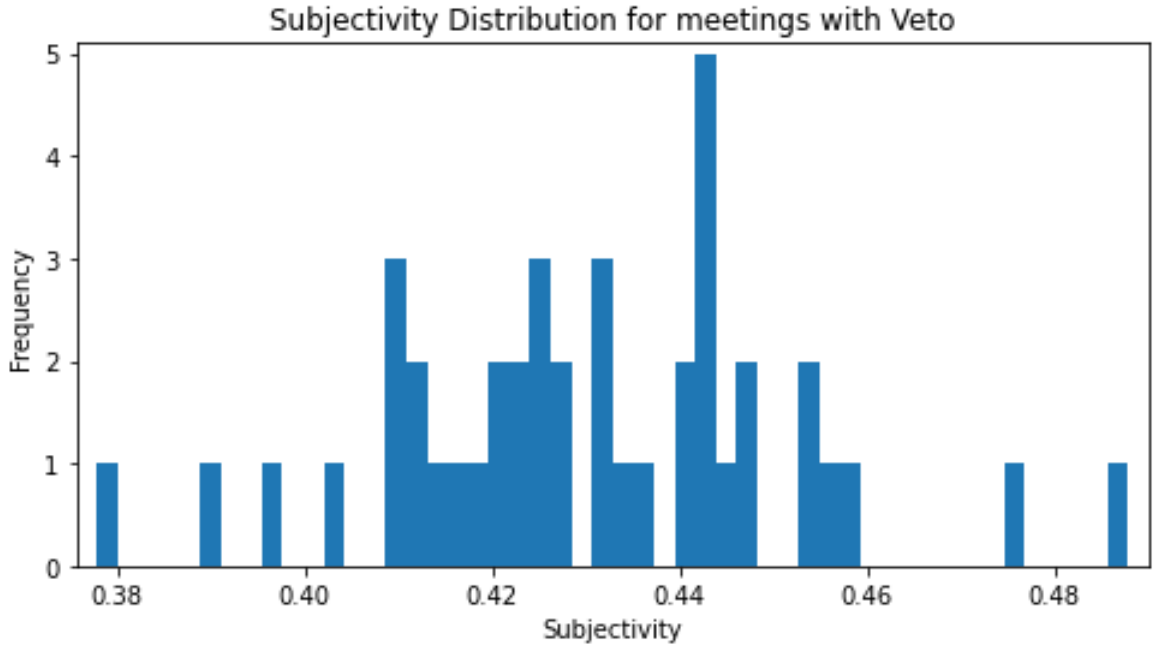

Figure 5.12: Sentiment Subjectivity Distribution for meetings with Veto

Figures 5.12 and 5.13 indicate no real outspoken difference in the amount of subjectivity between meetings with or without veto. The only notable difference is that there is some subjective speech on meetings without veto, whereas meetings with veto are never

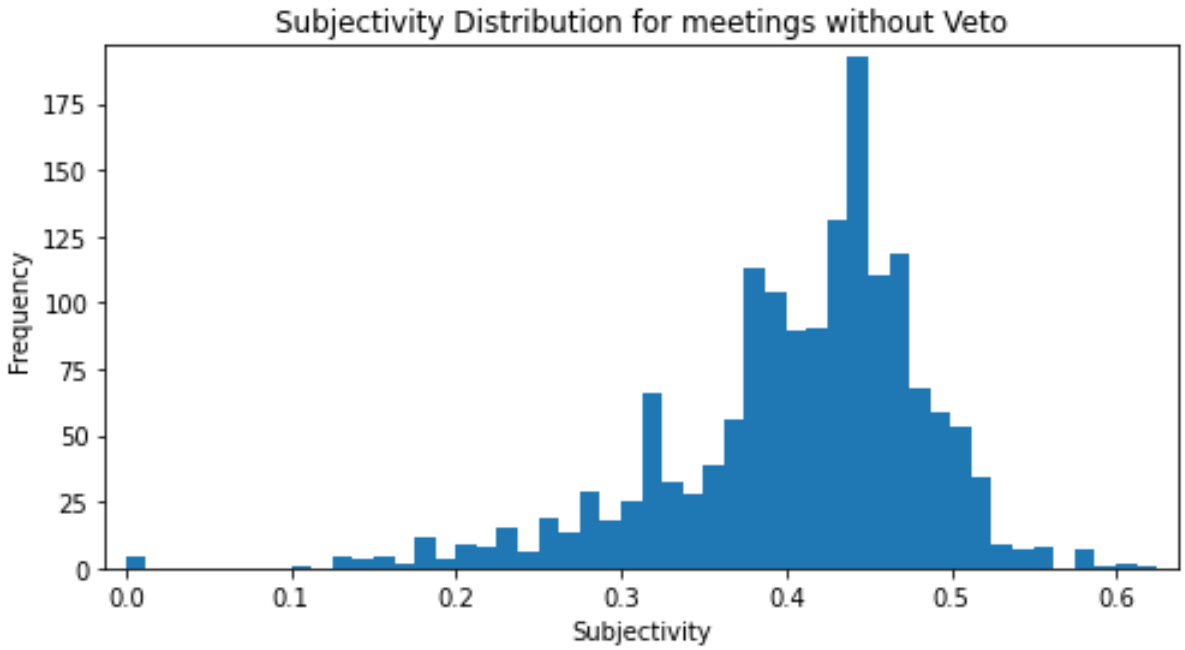

Figure 5.13: Sentiment Subjectivity Distribution for meetings without Veto

subjective. This is again confirmed numerically.

```
meetings_with_veto_subjective = pre_processed_df.query(
    'sentiment_subjectivity >= 0.5 and veto_used_in_meeting == True'
)['meeting_id'].count()

print(
    f'Number of meetings considered subjective where a veto was used:
    {meetings_with_veto_subjective}'
)

meetings_without_veto_subjective = pre_processed_df.query(
    'sentiment_subjectivity >= 0.5 and veto_used_in_meeting == False'
)['meeting_id'].count()

print(
    f'Number of meetings considered subjective where a veto was NOT used:
    {meetings_without_veto_subjective}'
)

meetings_with_veto_objective = pre_processed_df.query(
    'sentiment_subjectivity < 0.5 and veto_used_in_meeting == True'
)['meeting_id'].count()

print(
    f'Number of meetings considered objective where a veto was used:
    {meetings_with_veto_objective}'
```

```
)

meetings_without_veto_objective = pre_processed_df.query(
    'sentiment_subjectivity < 0.5 and veto_used_in_meeting == False'
)['meeting_id'].count()

print(
    f'Number of meetings considered objective where a veto was NOT used:
    {meetings_without_veto_objective}'
)
```

Number of meetings considered subjective where a veto was used: 0
Number of meetings considered subjective where a veto was NOT used: 121
Number of meetings considered objective where a veto was used: 42
Number of meetings considered objective where a veto was NOT used: 1472

We conclude for **EDAQ5** that there is no immediate relation between sentiment and the use of a veto in UNSC meeting transcripts. The UNSC member states are neutral to mostly positive in speech. Negative sentiment occurs but according to our analysis more in meetings where no veto was used. Meetings with veto are mostly neutral whereas meetings without veto are mostly positive. We can also conclude the UNSC is using objective language most of the time. Subjective speech exists but appears to show up more in meetings where no veto is used.

These results are counterintuitive to our initial assumptions. We expected that when a veto is used, the overall sentiment of the meeting would be lower than for a meeting where the discussed resolutions are being adopted. Similarly, we expected a higher presence of subjectivity for those discussions where a veto is used. We speculate this is due to the vetoing states wanting to appear more formal, not biased, to defend their vote and mitigate negative feedback from other states.

5.2. EDA ON UNSC RESOLUTIONS

The next EDA questions are related to the resolutions themselves that are discussed in the meetings. Since we are interested in the effects of veto, only draft resolutions are considered in scope.

5.2.1. TEXT PRE-PROCESSING

Similar to what we did for the UNSC meeting transcripts in section 5.1.1, we clean the text of the resolutions. We build further upon the data frame of section 5.1, which means data prior to 1994 has already been excluded.

As with UNSC meeting transcripts, the resolution texts are also embedded in United Nations Security Council styled documents with headers, footers, and other text that can be considered noise that does not add semantics to the content of the draft resolution. Please refer to Appendix C for an example of a draft resolution. The cleaned text (without contractions, tokenized, without punctuation and stopwords, and lemmatized) is stored as separate features in our data frame.

Because it follows the exact same flow as for the UNSC meeting transcripts we do not include code snippets. The full code can be reviewed on GitHub.

5.2.2. EDAQ6 - NAMED BIAS IN RESOLUTION ANALYSIS

[Benson and Kathman, 2014] consider a resolution biased if it *demands, urges, condemns, deplores,* or *establishes sanctions* against a specifically named party. If that party was addressed negatively, there is a negative bias. If we assume such bias exists, it may lead to an increased usage of the veto.
In order to analyze this, we simply count the number of vetoed and non-vetoed resolutions containing these verbs.

```
print(
    "Number of resolutions vetoed: {}"
    .format(
        meetings_and_resolutions_df.query(
            'status=="vetoed"'
        )['draft_id'].count()
    )
)
...
print("Number of resolutions not vetoed: {}".format(
    meetings_and_resolutions_df.query(
        'status!="vetoed"')['draft_id'].count()
    )
)
print("------------------")
print(
    "Occurrences of 'demands' for a vetoed resolution:\t{}"
    .format(
```

```
        meetings_and_resolutions_df.query(
            'status=="vetoed"'
        )['draft_text']
        .str.contains('demands').sum()
    )
)

print(
    "Occurrences of 'demands' for a non-vetoed resolution:\t{}"
    .format(
        meetings_and_resolutions_df.query(
            'status!="vetoed"'
        )['draft_text']
        .str.contains('demands').sum()
    )
)
print("------------------")
print(
    "Occurrences of 'urges' for a vetoed resolution:\t\t{}"
    .format(
        meetings_and_resolutions_df.query(
            'status=="vetoed"'
        )['draft_text']
        .str.contains('urges').sum()
    )
)
...
```

Number of resolutions vetoed: 133
Number of resolutions not vetoed: 2364

———————

Occurrences of 'demands' for a vetoed resolution: 9
Occurrences of 'demands' for a non-vetoed resolution: 277

———————

Occurrences of 'urges' for a vetoed resolution: 11
Occurrences of 'urges' for a non-vetoed resolution: 664

———————

Occurrences of 'condemns' for a vetoed resolution: 9
Occurrences of 'condemns' for a non-vetoed resolution: 201

———————

Occurrences of 'deplores' for a vetoed resolution: 5
Occurrences of 'deplores' for a non-vetoed resolution: 48

———————

Occurrences of 'sanctions' for a vetoed resolution: 6
Occurrences of 'sanctions' for a non-vetoed resolution: 229

The number of times these words show up in vetoed resolutions is far less than the number of occurrences in non-vetoed resolutions. As such we believe that even if they would signal a form of bias against a specific named state, the effect on veto remains neglectable. Especially when considering the total amount of vetoed or not vetoed resolutions. 5% of the resolutions in our dataset between 1994 and 2021 are vetoed. Of that 5%, these keywords are only found in only 30% of the cases. We conclude for **EDAQ6** that there is no direct relation between the bias [Benson and Kathman, 2014] suggest and the usage of veto.

5.2.3. EDAQ7 - Veto by Word Frequency

We concluded so far that word count of meeting transcripts has no effect on the usage of veto. The same is true when we count the number of words in resolution texts. The frequency is again related though. We again look at the 100 most common words used in resolutions, and build a word cloud with them. This time though, since resolutions follow a fixed writing style, we were seeing a high frequency of these 'template words'. We filter these out while we generate a word cloud to graphically show the word frequency.

```
words_in_vetoed_resolutions = pre_processed_df.query(
    'status=="vetoed"'
)['draft_text_lemmatized_text']

words_in_non_vetoed_resolutions = pre_processed_df.query(
    'status!="vetoed"'
)['draft_text_lemmatized_text']

allwords_in_vetoed_resolutions = []
for wordlist in words_in_vetoed_resolutions:
    allwords_in_vetoed_resolutions += wordlist

allwords_in_non_vetoed_resolutions = []
for wordlist in words_in_non_vetoed_resolutions:
    allwords_in_non_vetoed_resolutions += wordlist

from nltk.probability import FreqDist
from wordcloud import WordCloud, ImageColorGenerator
import matplotlib.pyplot as plt

mostcommon = FreqDist(allwords_in_vetoed_resolutions).most_common(100)

stopwords = ['state','shall','resolution','united','nation','security',
'council','recalling','reaffirming','welcoming','acting','calling',
'stressing','including']

wordcloud = WordCloud(
    background_color='white',
    stopwords=stopwords
).generate(
    ' '.join(dict(mostcommon))
```

```
)

fig = plt.figure(figsize=(10,10), facecolor='white')
plt.imshow(wordcloud, interpolation="bilinear")
plt.axis('off')
plt.title('Top 100 Most Common Words in Vetoed Resolutions', fontsize=32)

plt.tight_layout(pad=0)
plt.show()
```

The same Python code using the *allwords_in_non_vetoed_resolutions* list is executed and leads to figures 5.14 for vetoed resolutions and 5.15 for non-vetoed resolutions. The outcome is similar to what was seen in the word clouds of section 5.1.4. Indeed, the top 100 words in vetoed resolutions that immediately jump out are *syrian, arab, peace, crime, humanitarian, chemical, weapon, violence, palestinian, ...* . The top 100 words in the non-vetoed resolutions word cloud in contrast show *government, support, peace, effort, force, ...*

The answer to **EDAQ7** corroborates the answer of **EDAQ3**: There is a strong correlation between the used words in a resolution and the usage of veto.

Figure 5.14: Word Cloud of the Top-100 Most Common Words in Vetoed Resolutions

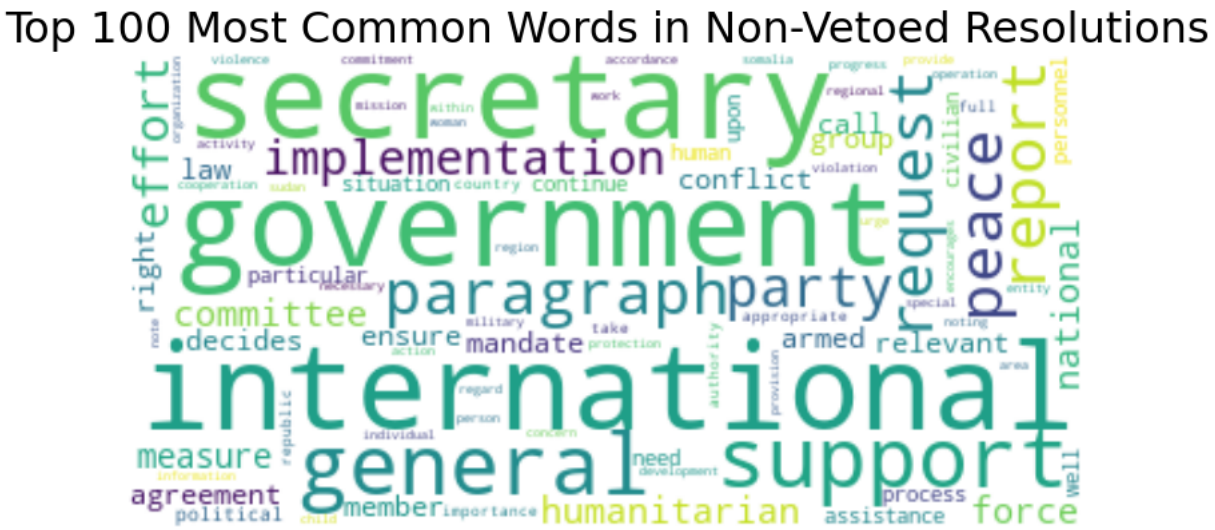

Figure 5.15: Word Cloud of the Top-100 Most Common Words in Non-Vetoed Resolutions

5.2.4. EDAQ8 - VETO BY SENTIMENT

As a final EDA question, we wanted to see if the sentiment in the resolutions itself has a correlation to the usage of veto or not. Like in section 5.1.6, the lemmatized text is converted back into a string, which we process with TextBlob for polarity and subjectivity analysis. Figure 5.16 shows the polarity in the resolutions is overall comparable with that of the meeting transcripts. Again, a mostly neutral choice of words, without outspoken negative or positive sentiment. Figure 5.17 is an almost exact replica of figure 5.16 which indicates that the overall effect of the veto is neglectable. Or vice-versa, the sentiment in resolutions has little to no relation on the usage of veto voting.

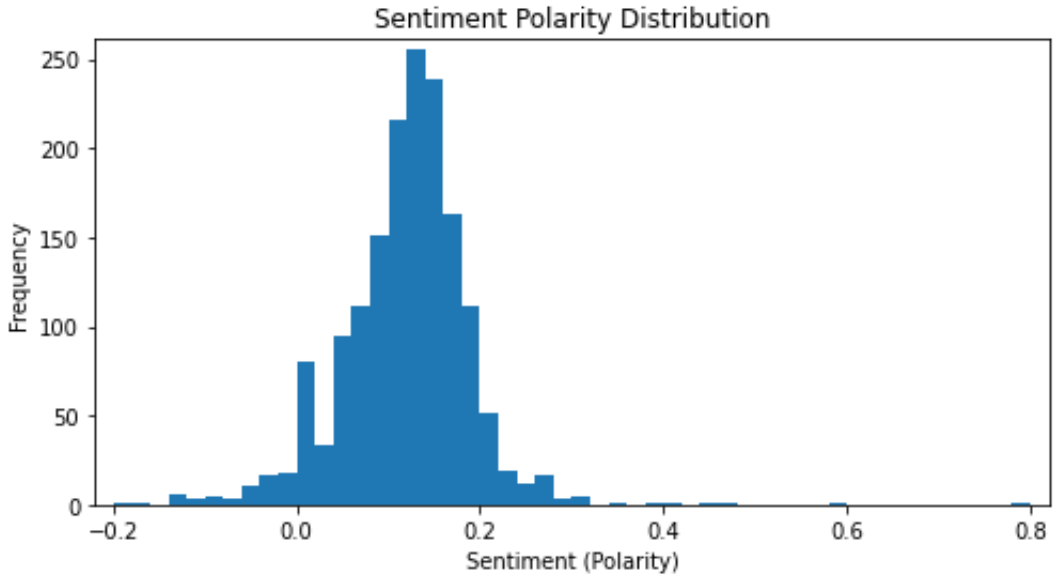

Figure 5.16: Sentiment Polarity Distribution of Resolutions

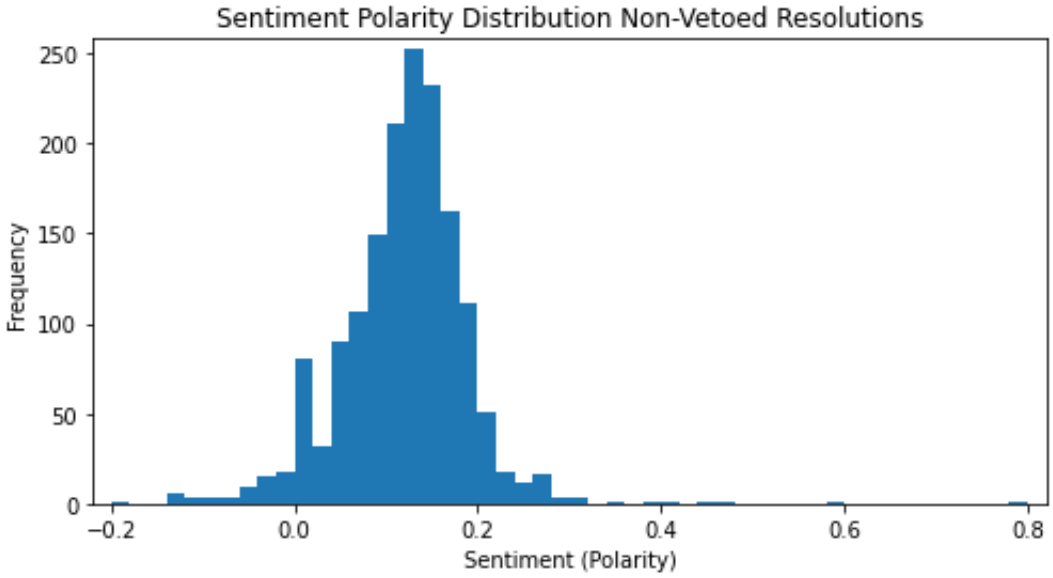

Figure 5.17: Sentiment Polarity Distribution of Non-Vetoed Resolutions

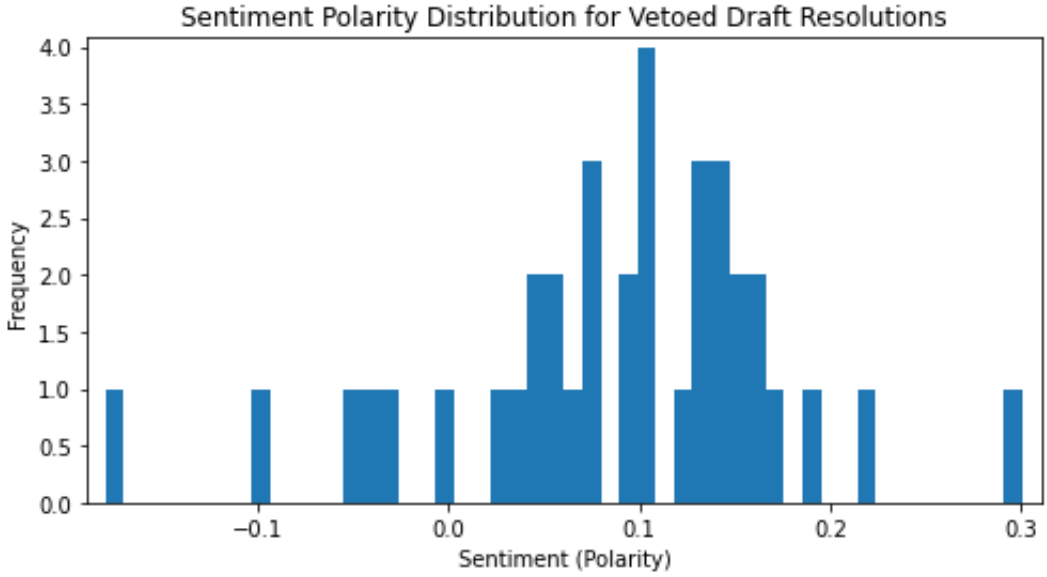

Figure 5.18: Sentiment Polarity Distribution of Vetoed Resolutions

Numerically speaking, we see the same results as expected:

```
resolutions_with_veto_negative = pre_processed_df.query(
    'draft_text_sentiment_polarity < 0 and status == "vetoed"'
)['draft_id'].count()
print(
    f'Number of Resolutions with negative sentiment where a veto was used:
    {resolutions_with_veto_negative}'
)

resolutions_without_veto_negative = pre_processed_df.query(
    'draft_text_sentiment_polarity < 0 and status != "vetoed"'
)['draft_id'].count()
print(
    f'Number of Resolutions with negative sentiment where a veto was NOT used:
    {resolutions_without_veto_negative}'
)

resolutions_with_veto_positive = pre_processed_df.query(
    'draft_text_sentiment_polarity >= 0 and status == "vetoed"'
)['draft_id'].count()
print(
    f'Number of Resolutions with positive sentiment where a veto was used:
    {resolutions_with_veto_positive}'
)

resolutions_without_veto_positive = pre_processed_df.query(
    'draft_text_sentiment_polarity >= 0 and status != "vetoed"'
)['draft_id'].count()
print(
    f'Number of Resolutions with positive sentiment where a veto was NOT used:
    {resolutions_without_veto_positive}'
)
```

Number of Resolutions with negative sentiment where a veto was used: 6
Number of Resolutions with negative sentiment where a veto was NOT used: 57
Number of Resolutions with positive sentiment where a veto was used: 31
Number of Resolutions with positive sentiment where a veto was NOT used: 1537

Similar results for subjectivity can be seen by the numbers and the histogram in figures 5.19 and 5.20. We see again an almost exact replica showing that the subjectivity has little to no correlation to the resolution being vetoed or not.

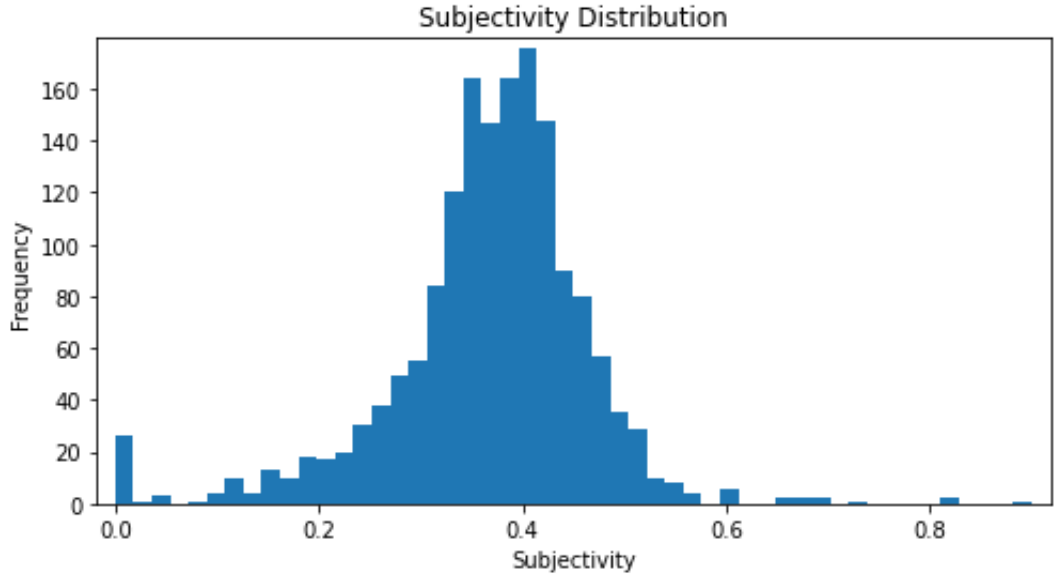

Figure 5.19: Sentiment Subjectivity Distribution of Resolutions

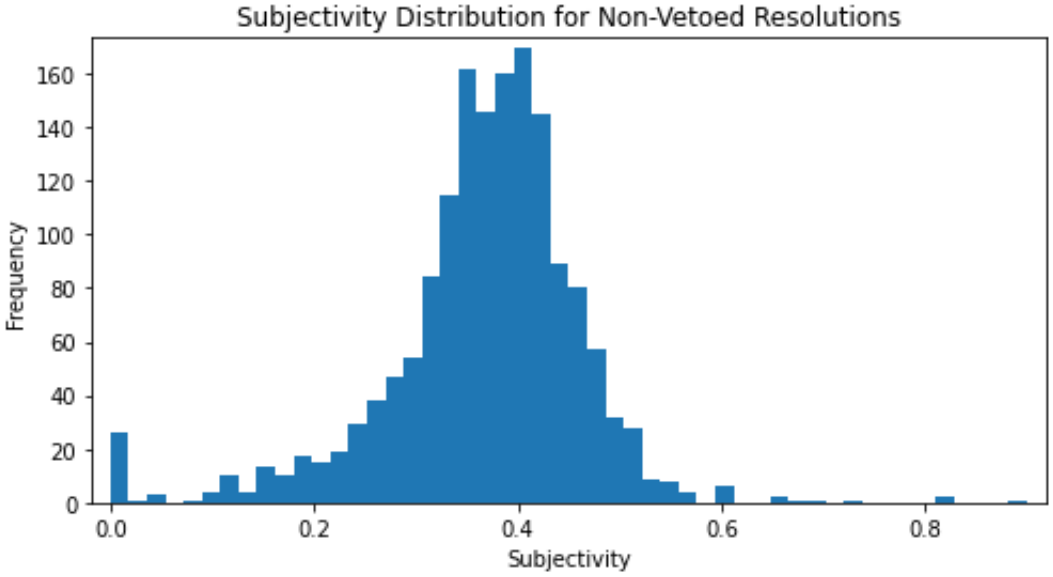

Figure 5.20: Sentiment Subjectivity Distribution of Non-Vetoed Resolutions

```
resolutions_with_veto_subjective = pre_processed_df.query(
    'draft_text_sentiment_subjectivity >= 0.5 and status=="vetoed"'
)['draft_id'].count()
print(
    f'Number of resolutions considered subjective where a veto was used:
    {resolutions_with_veto_subjective}'
)

resolutions_without_veto_subjective = pre_processed_df.query(
    'draft_text_sentiment_subjectivity >= 0.5 and status!="vetoed"'
)['draft_id'].count()
print(
    f'Number of resolutions considered subjective where a veto was NOT used:
    {resolutions_without_veto_subjective}'
)

resolutions_with_veto_objective = pre_processed_df.query(
    'draft_text_sentiment_subjectivity < 0.5 and status=="vetoed"'
)['draft_id'].count()
print(
    f'Number of resolutions considered objective where a veto was used:
    {resolutions_with_veto_objective}'
)

resolutions_without_veto_objective = pre_processed_df.query(
    'draft_text_sentiment_subjectivity < 0.5 and status!="vetoed"'
)['draft_id'].count()
print(
    f'Number of resolutions considered objective where a veto was NOT used:
    {resolutions_without_veto_objective}'
)
```

Number of Resolutions considered subjective where a veto was used: 5
Number of Resolutions considered subjective where a veto was NOT used: 72
Number of Resolutions considered objective where a veto was used: 32
Number of Resolutions considered objective where a veto was NOT used: 1522

We conclude for **EDAQ8** that there is no correlation between the polarity or subjectivity of draft resolution texts and the usage of veto.

5.3. SUMMARY

In this chapter we completed research goal ***G3 - We understand which factors impact veto voting through data analysis***. This goal allowed us to answer research question ***SRQ3 - "What can be learned from a data analysis on the UN Security Council resolutions and meetings?"***.

We learned that the permanent UNSC members using the veto power the most are Russia and US. Since 1994, they, in addition to China, are the only states that have cast a veto. We learned that those vetoes were usually cast whenever a specific topic was discussed. The US would typically cast a veto whenever Palestine is discussed, Russia and China mostly when the resolution is about Syria.

This was confirmed through both an overview of vetoed topics per state, and made visible through word frequency clouds where we see a strong negative bias from the veto casting member states towards Palestine and Syria frequently using the words *Arab, Terrorist, Chemical, Weapon, ...* etc. Other topics are more neutral, more representing the primary mission of the UN Security Council.

We also concluded that most meetings where resolutions were vetoed are longer, presumably because of the longer speeches to defend the veto or, contrary, to express frustration on the decisions made.

Finally, we learned that there is no direct relation between negativity or subjectivity and veto voting. While we expected vetoes to be surrounded with an elevated level of negativity or subjectivity, the contrary was true. We see more neutral and objective language whenever vetoes were involved.

As such, we concluce that the only real trigger for a veto is the topic of discussion, and by implication, the draft resolution being discussed.

6

UN SME INTERVIEWS

In this chapter, we give an overview of the interviews we have done with UN Subject Matter Experts. As explained in chapter 3, the interview protocol can be reviewed in appendix B. We held these interviews to achieve research goals ***G5 - "We know what should be done when bias is detected and/or how to react to it"*** and ***G1 - "bias in the UN voting process is understood"***. While a vast amount of research is available in the existing body of knowledge regarding the United Nations Security Council (UNSC) and veto voting, we believe we identified a research gap when it comes to building software or computational models to detect biased veto voting. These interviews serve as design input and validation if it is actually possible to build such a solution.

In total, we contacted seven academic domain experts and six directly connected representatives of the UN. The academia invited are well versed in the inner workings of the UNSC and its veto votings by evidence of their publications or book citations. Three of the academic experts took the time to work with us. The duration of each interview was 45 minutes. The academia we interviewed have the title Presidential Professor Political Sciences, Professor Political Sciences, and Professor of International Relations. The only UN or government representative we have been able to talk to was the Belgian Mission to the UN. For details on the used interview protocol, please refer to Appendix B.

We started by reminding the interviewed person of the primary role of the UNSC [UN]:

"According to the UN Charter, the UN Members confer on the Security Council primary responsibility for the maintenance of international peace and security, and agree that in carrying out its duties under this responsibility the Security Council acts on their behalf."

With this upfront, we asked the following six questions:

- **SMEQ1:** Is the usage of the veto by the great powers consistent with the primary mission of the security council as defined by the UN charter?
- **SMEQ2:** What is the value of the veto vote to you and what do you feel are good reasons for a veto to be used?
- **SMEQ3:** Have you encountered situations where a veto was used illegitimately?

- **SMEQ4:** What is to you an indication that a veto was not used in a legitimate way?
- **SMEQ5:** What does biased voting mean to you, if anything?
- **SMEQ6:** Imagine an intelligent machine would attend a meeting..Do you think it is possible it could detect bias or illegitimate voting?
  - **SMEQ6a:** If yes, what would you require or expect from such a system? If illegitimate veto voting is detected, what do you think are appropriate consequential actions? What are good ways to limit and control the effect of it
  - **SMEQ6b:** If not, please elaborate.

These questions were not shared with the interviewed people on beforehand, nor did they know any next question during the interview. They were asked one after another, to avoid them being able to build a bias for the ultimate design input question SMEQ6. Please refer to the interview protocol in appendix B for details on our approach.

The responses to SMEQ1 were short, unanimous, and concise: *"No"*. No state in the UN acts sufficiently in the interest of the global public good. They interpret the primary mission by what it means in the light of their own national interests. Major powers do this all of the time as opposed to middle powers who occasionally think of the bigger community. This self-interest, contradictory to the primary mission, is consistent with the way the charter is organized in itself. The charter has its own internal contradictions according to at least one interviewed SME. In fact, the only reason we have a Security Council today is that the veto was put in place such that Washington and Moscow would not pull out from the beginning, keeping them as members of the UN. To convince world powers to give away some of their sovereignty to the new organ the UN was in 1946, they needed an instrument that would safeguard their core interests. That instrument was the veto and is used exactly for that one main reason: to protect their own interests. The answer to SMEQ1 as such is *"No, the usage of the veto is not consistent with the primary mission of the UNSC"*.

When we raised SMEQ2, the answers followed the same pattern again amongst the different interviewees. One interviewee kept it short that there should be no veto at all. It should be completely democratized. That there is no good reason for it at all. The others continue with the same reasoning as for SMEQ1: it promotes participation; without veto power, the major powers would be vulnerable and would not have joined, or even leave the UN today if their veto rights were revoked. One interesting comment made was that the P5 are no longer the major power. There are other powers outside that are not permanent members. One example was given indicating how Germany is today a much more significant European power compared to France or the UK. Similar to the comment about democratizing the voting, one interviewed SME suggested the veto would be more valuable if you needed at least two vetoes in order for it to be exercised. This would make sure not one country can stand in the way anymore. However, the SME also commented that if there would ever be a single US veto, and the UNSC would overrule that, the US would pull out instantly. Which brings us to the question of which is better: having a security council, or not having a security council? While the veto inhibits sometimes the effectiveness of the UNSC, consensus still forms on better having a most of the time effective UNSC versus no

UNSC at all. The answer to SMEQ2 is thus *"The value of the veto is to have a UNSC, but there are no good reasons to use it"*.

SMEQ3 and SMEQ4 were answered together by all interviewees. They brought up a lot of interesting points and seem to have triggered most frustration with the UNSC veto voting. There was again unanimous agreement that most of the veto voting is unjustified. Some of these vetoes completely block the implementation of international law. If a veto was used to prevent a resolution consistent with the legal responsibilities of the UN organization, then it can not be justified. The example was given that when under international law the Israeli settlements on occupied Palestinian land are illegal, a veto blocking a resolution addressing such settlements is illegitimate and unjustified. Another example is a veto vote blocking humanitarian aid to the Syrian people on the verge of starvation. It was called out that humanitarian needs should always precede political goals, no matter what they are. It was also brought up by multiple SMEs that what we see in public is only the tip of the iceberg. Many initiatives are already discussed and decided behind closed doors because there is not enough support for them. We distinguish the visible and invisible veto. Sometimes member states already know a resolution will be vetoed, and do not bring it in front of the UNSC. This would be classified as an invisible veto. Sometimes, knowing very well it will be vetoed, the proposing state may still put the attention on the vetoing act of a P5 member so it is seen publicly. That is seen as a visible veto, and is strategically used to influence the public perception of political opponents. Finally, specifically to answer the question of what is available to the general public was that it is not possible to develop a simple checklist. Some questions that may guide us are *"Is the country alone in its use of veto?", "Why is there no broader support?", "What do editorials in various media say? What is the judgment of international opinion?"*. The answer to SMEQ3 would be *"Almost all usages of the veto are illegitimate"*. The answer to SMEQ4 would be *"The moment a veto favors self-interest over humanitarian aid and/or opposes international law, a veto vote is unjustified or illegitimate"*. This is immediately also the answer to research question ***"SRQ1 - "What is biased veto voting in the UN Security Council?"***. We already found a partial answer in chapter 2 - our literature study - in that the UN is by nature biased to a certain degree. Here we finetuned the answer by clarifying when we consider a veto vote biased.

In question SMEQ5 we received again aligned responses. By definition, all voting is biased since a vote is an expression of preference. The SMEs went as far as saying there is no such thing as an objective vote. The discussion came back to the point of states voting for their own interest. What motivates a state the way it votes can be seen in what the state says, although a lot of theater is involved. They are always mindful of their presentation of themselves in public. An example was given why for instance the US and other states were reluctant to take more forceful measures concerning the violence in Rwanda before the genocide there. Not coincidental that the US suffered a humiliating defeat in Somalia not long before [JOHNSON and TIERNEY, 2006], it was reluctant to expose itself again to possible defeat and humiliation. To help safeguard their public presentation, UNSC member state representatives are trained in the way they speak, using a soup of acronyms, devised to hide political preference. As such, the answer to SMEQ5 is *"All voting is biased by definition. Mostly because of preferences and self-interest."*

Lastly, we revealed the purpose of asking these questions and if - judging by their experience - it is possible to build an intelligent machine to mitigate biased or illegitimate veto voting. The answer to SMEQ6 can be summarized as *"Not really..but"*. Such a machine would have to be programmed to reflect the values of the UN member states. As can be seen from the previous discussion, that in itself is already impossible. The program would need to be validated and approved by 193 member states to agree on the criteria of its decisions. The second problem the SMEs see is in the automatic or autonomous functioning of such intelligent machine. If we know that the major powers only joined the UN if they were given veto power, they would want something to overrule the machine in its decisions as well. The third problem, probably the most limiting one, is the training of such an intelligent machine. Not only does it need to have the values of the UN as an organization and aspects such as vision, diplomatic relations and interests, and values of each member state, it also needs enough training data. Given that today most discussions happen today in private behind closed doors, there will never be a sufficient amount of public data to train the machine. An idea that came from two independent SMEs is the idea of contradiction detection. A machine would be trained to analyze all past decisions and statements and if states vote differently compared to before it can be flagged. This would not be an easy undertaking due to the subtleties in historical records. A lot of context and circumstances around all the decision-making needs to be taken into account and understood for it to be able and compared. Another idea was that if a machine could register whether a particular vote is consistent with the prescribed mission of the UN, and if the result is *"No"*, the machine could cast a sort of super veto. A veto, vetoing the veto. This is an answer to ***SRQ5 - "Which control measures or actions could be considered when bias is detected?"*** next to the one we suggested in chapter 2: automatically calling the *"Uniting for Peace"* resolution. This type of autonomous intelligent machines interfering in the political decision making brings back the potential problems that vetoes do not need to be explained, and that permanent members would never accept such a device to interfere in their political decision-making. The answer to SMEQ6 would be *"No, too many diplomatic conversations happen non-public, making training limited that what is published externally. Even when it would be possible, the idea will more than likely be opposed by those whose veto power potentially would be diminished"*.

In summary, we learned from the UN SMEs that our initial goal of building a machine that would detect and control biased veto voting in the UNSC seems not immediately possible. The reasons are mainly non-technical, some of which the same that seem to impede other reform suggestions from the past. Future research could further look into UNSC contradiction detection and its effects on the UNSC operations.

7

DEEP LEARNING

In the previous chapters, we covered the problem domain background and discussed related work, the data collection, processing, and analysis in-depth. We also discussed how the veto came to exist and when it is considered biased. In our data analysis in chapter 5, we made a data-driven hypothesis that a veto is only correlated to and triggered by a topic, or by implication, by the content of a resolution. As described in chapter 2, [Donnelly, 1988] mentions there is bias when comparable violations in two countries are responded to differently. He also refers to the [The International Bill of Human Rights] and calls out systematic neglect, dismissal, or ignoring as clear evidence of bias. Add to this the input from our interviewed SMEs in chapter 6 that if humanitarian causes are blocked or international law is violated, there is an unjustified or illegitimate - by definition biased - veto vote.

In this chapter, we investigate research goal ***G4 - "We know what is needed to build a computational model to predict veto voting"***. We research if we can build an intelligent model which can predict, based on topic or resolution text, whether or not there will be a veto in order to provide an answer to research question ***SRQ 4 - "Is it possible to build a computational model to predict veto voting using the current data?"***.

In order to answer this question, we consider a Deep Learning approach using the current state-of-the-art techniques for Natural Language Processing (NLP). We first provide a theoretical review of Machine Learning and Deep Learning. We then build a multi-label classifier to predict which country would cast a veto. We try this using two approaches. The first classifier predicts which P-5 member will cast a veto vote given a resolution topic. The second classifier predicts the same but based on resolution text. Finally, we provide a summary for this chapter.

7.1. THEORETICAL BACKGROUND

In this section, we start by giving an overview of what Machine Learning is and what problems it can help us solve. We contrast it to traditional software engineering, discuss different types, and introduce the relevance and importance of datasets. We then discuss the important concepts of loss functions and optimization algorithms. Next, we discuss the building blocks of neural networks. We touch upon multilayer perceptrons and activation

functions. Finally, we discuss the main topic for our research: Natural Language Processing using the BERT transformer, and we explain some of the metrics we can use to evaluate how well our model performs. This chapter serves as a brief overview of the inner workings of Machine Learning for a Software Engineering audience to understand the implementation and choices made further in section 7.2. The theory in the following section was mainly taken from the *Dive into Deep Learning*[Zhang et al., 2021] and the *Deep Learning* [Goodfellow et al., 2016] books.

7.1.1. INTRODUCTION

Traditional software usually has a way to interact with the software through a frontending user interface layer, graphical or not (for example a network API). That frontend layer interacts with the business logic of the software which gives consequence to any input received. They are pretty deterministic and often go by a multitude of *"if this then x, else y"*-flows. While some of this software can be highly complex (think of Operating Systems, Rocket Launching software, Simulation Software, Office Suites, and others), it can be built completely upfront, without ever seeing a real customer or use. This speaks for the human ingenuity, our intellect, and how much we have progressed in the domain of software engineering over time.

When it comes to making predictions (possibly based on changing parameters), recognizing and - more importantly - understanding what is present in text, audio samples, or images, even learning from gained experience, we cannot rely on traditional software engineering techniques anymore. Machine Learning is the field of science that addresses these types of problems. It can learn, and keep learning, how to achieve a desired result as long as there is data and sufficient memory and computing power. In other words, Machine Learning brings the capability to learn from inputs and results - possibly millions of them - without the need for us to create and structure a program ourselves [Zhang et al., 2021]. Figure 7.1 illustrates this difference candidly.

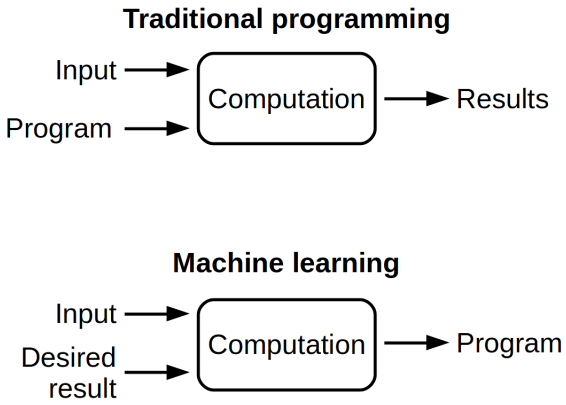

Figure 7.1: Conventional Software Engineering vs Machine Learning. Source: Futurice Blog - Differences between machine learning and software engineering

In Machine Learning, the program is flexible and the behavior is determined by parameters. The program where the parameters have been set is called a model. There are different families of models based on what type of input and output combination the task requires. Examples of model families are regression models specializing in predicting *'How many?'* or *'How much?'*, and classification models predicting *'to which class(es) does this belong?'*.

Once a model family has been chosen for the problem at hand, the parameters can be optimized. The determining of the best parameters is done through what is called a learning algorithm. The program learns from a dataset, and is being trained to become better at doing its specific task. Recognizing a cat in a photo is an example of a classification model. If enough photos are available in the dataset labeled as *cat*, together with enough photos of other animals, the machine will learn through training what makes a cat a cat by analyzing the images. In the example of the cat, the images in the dataset would have been labeled. The dataset has a label - sometimes also referred to as target or class - set to *cat* for cat photos. This is called supervised learning. When these labels are not available, we talk about unsupervised learning. The inputs from which a model ultimately makes its predictions vary. For a text sentence, you can think of the individual words and the amount of them. For a photo, imagine the number of pixels, and an RGB value per pixel. Each such input is called a feature. The output to predict is called the target or label. Based on the features a model can then make its predictions.

One of the first steps after cleaning the data in a format that the model can consume is splitting the data into two separate sets. The first one is the training set, used for fitting the model parameters. The second one is the test set for evaluation how well the model performs on unseen data. The ability to perform well on previously unseen data is called generalization. When a model performs well during the training but not on the test data, the model is overfitting and not generalizing well. In other words, we want the error on the test set as low as possible. When the model is unable to obtain a sufficiently low error rate on the training set, we call this underfitting [Goodfellow et al., 2016].

For learning to work well, there are two important elements: an objective function (also called criterion) that can quantify how bad the model is doing (so it knows when it needs to improve), and an optimization algorithm that tweaks the parameters (to improve the results of the objective function). The error rate is commonly referred to as loss or cost. It is this error function (again, more commonly named loss or cost function) that needs to be minimized. This happens through multiple iterations through the training set. Such iteration is more commonly referred to as an *epoch*.

We will briefly discuss two common loss functions: one for regression models and one for classification models. We will then discuss optimization algorithms.

7.1.2. Loss Functions

A common loss function for regression models is squared error, or the square of the difference between the prediction and the real value.

Imagine we want to estimate the price of a house based on the area and the age of the building. The target (price) can be expressed as the sum of the features area and age:

$$price = w_{area}.area + w_{age}.age + b \tag{7.1}$$

With w_{area} and w_{age} the weights and b a bias. Weights determine how much each feature influences a prediction and the bias defines what value a prediction should have when all features would equal to zero. This can be written more generically as:

$$\hat{y} = w_1 x_1 + w_2 x_2 + .. + w_d x_d + b \tag{7.2}$$

with $\hat{y}$ the prediction, x_i features of the feature vector $\mathrm{x} \in \mathbb{R}^d$, and w_i weights of the weights vector $\mathrm{w} \in \mathbb{R}^d$ a vector of weights. This can be expressed more compactly using the dot product:

$$\hat{y} = \mathrm{w}^{\mathrm{T}}.\mathrm{x} + b \tag{7.3}$$

Vector x contains the features of a single data example. It is often more convenient to refer to features of the entire dataset of n examples via the design matrix $\mathrm{F} \in \mathbb{R}^{n\mathrm{x}d}$, where F contains one row for every example and one column for every feature.

For such collection of features F, the predictions $\hat{\mathrm{y}} \in \mathbb{R}^n$ can then be expressed as the matrix-vector product:

$$\hat{\mathrm{y}} = \mathrm{Fw} + b \tag{7.4}$$

Assume our model evaluates example i and it predicts $\hat{y}^{(i)}$ with the true value $y^{(i)}$, the squared error loss function would be:

$$l^{(i)}(\mathrm{w}, b) = \frac{1}{2}\left(\hat{y}^{(i)} - y^{(i)}\right)^2 \tag{7.5}$$

Since the goal is to minimize errors (or loss) across the entire dataset, we average this over the entire dataset:

$$L(\mathrm{w}, b) = \frac{1}{n}\sum_{i=1}^{n} l^{(i)}(\mathrm{w}, b) \tag{7.6}$$

$$L(\mathrm{w}, b) = \frac{1}{n}\sum_{i=1}^{n} \frac{1}{2}\left(\hat{y}^{(i)} - y^{(i)}\right)^2 \tag{7.7}$$

$$L(\mathrm{w}, b) = \frac{1}{n}\sum_{i=1}^{n} \frac{1}{2}\left(\mathrm{Fw} + b - y^{(i)}\right)^2 \tag{7.8}$$

$$L(\mathrm{w}, b) = \frac{1}{n}\sum_{i=1}^{n} \frac{1}{2}\left(\mathrm{w}^{\mathrm{T}}\mathrm{x}^{(i)} + b - y^{(i)}\right)^2 \tag{7.9}$$

Optimizer algorithms need to find parameters (w, b) that minimize the loss.

When it comes to classification models, a common loss function is cross-entropy. Consider a classification target $\hat{y}_{cat} = P(y = \mathrm{cat}|\mathrm{x})$. It represents the probability that given any input x an item belongs to the class *cat*. We can say that $\hat{\mathrm{y}}$ is the vector giving model predictions over q classes, given an input x. If we compare these estimates with the reality y,

checking how probable the actual classes are compared to the model, we arrive at the loss function

$$l(\mathrm{y}, \hat{\mathrm{y}}) = -\sum_{j=1}^{q} y_j \log \hat{y}_j \tag{7.10}$$

This difference is called the cross-entropy. If the difference between the predictions and the reality is 0, it means the prediction is correct with certainty.

To illustrate this with an example, we use the dataset with cats once more. For each example there are 2 target labels: *cat* and *no-cat*. Whenever the example is a cat, the *cat* target for that example is 1 and *no-cat* is set to 0. Assume the model evaluates image example j which is a cat. The true label values would be *cat: 1, no-cat: 0*. If the model predicts *cat: 0.06, no-cat: 0.94*, the model did not recognize the cat and thinks it is not a cat. The cross-entropy loss gives an indication of how bad the prediction was: $-1 * \log(0.06) + 0 * 0.94 = 2,81$. A bad score, since good working models have a loss functions close to 0.

7.1.3. Optimzation Algorithms

Gradient Descent is one common type of optimization algorithm. In short, at each step, this method checks to see, for each parameter, which way the training set loss would move if you change that parameter just a small amount. It then updates the parameter in the direction that may reduce the loss.

Suppose we have a function $f : \mathbb{R} \to \mathbb{R}, y = f(x)$. The derivative of this function $\frac{dy}{dx} = f'(x)$ gives the slope of $f(x)$ at point x. Using a Taylor expansion we obtain:

$$f(x+\epsilon) \approx f(x) + \epsilon f'(x) \tag{7.11}$$

That is, $f(x+\epsilon)$ approximates the function value $f(x)$ and the first derivative $f'(x)$ at x.

It is reasonable to assume that for a small ϵ moving in the direction of the negative gradient ($\epsilon = -\alpha f'(x), \alpha > 0$), f will decrease. As such $f(x)$ can be reduced by moving x in small steps with the opposite sign of the derivative. This is the gradient descent, α the learning rate.

Considering the objective function $f : \mathbb{R}^d \to \mathbb{R}$ and feature vector $\mathrm{x} = [x_1, x_2, .., x_d]^{\mathrm{T}}$, f maps vectors into scalars. Functions with multiple inputs are more commonly called as multivariate functions. Multivariate functions their gradient is also multivariate. It is a vector consisting of $d$partial derivatives:

$$\nabla f(x) = \left[\frac{\partial f(\mathrm{x})}{\partial x_1}, \frac{\partial f(\mathrm{x})}{\partial x_2}, ..., \frac{\partial f(\mathrm{x}),}{\partial x_d} \right]^{\mathrm{T}} \tag{7.12}$$

Each partial derivative element $\frac{\partial f(\mathrm{x})}{\partial x_i}$ in the gradient indicates the rate of change of f at x with respect to input x_i. We can again use the Taylor approximation for multivariate functions:

$$f(x+\epsilon) \approx f(x) + \epsilon^{\mathrm{T}} \nabla f(x) \tag{7.13}$$

In other words, up to second-order terms in ϵ the direction of steepest descent is given by the negative gradient $-\nabla f(\mathrm{x})$. Choosing a suitable learning rate $\alpha > 0$ yields the prototypical gradient descent algorithm:

$$x' = x - \alpha \nabla_x f(x) \tag{7.14}$$

with α the learning rate, a positive number determining the size of each step towards a minimum.

With the learning step a step towards the minimum of a function, it is important to set it right. Figure 7.2 shows how if you make the learning rate, or step, too big, we may overshoot the minimum. If we make it too small, it may take too long to reach the minimum.

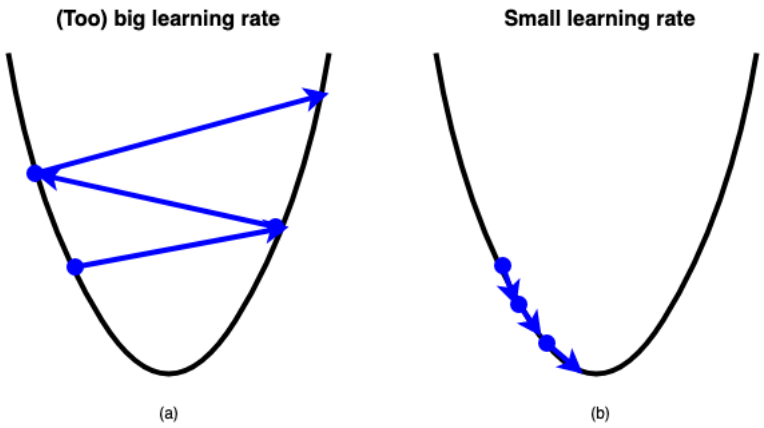

Figure 7.2: Too big learning rate can overshoot the minimum loss, too small may take too long to learn

There are methods that can determine the best learning rate automatically, but using the way as just described they cannot be applied to deep learning directly due to the computational cost [Zhang et al., 2021]. If we used gradient descent like this, the computational cost for each independent variable iteration is O(n), growing linearly with n (the size of our dataset). Because the gradient descent uses the full dataset to compute gradients, one pass at a time, the computational cost will be higher for each iteration. An alternative is using stochastic algorithms. These use a one example from the training dataset at a time, as opposed to the entire dataset. The Stochastic Gradient Descent is one of them. Imagine a training dataset of n items. Let us say $f_i(\mathrm{x})$ is the loss function working with a training example at index i, and x being our parameter vector. The objective function is usually the average of the loss functions for each example in the training dataset. The objective function can as such be formulated as:

$$f(x) = \frac{1}{n} \sum_{i=1}^{n} f_i(x) \tag{7.15}$$

We can compute the gradient of this objective function at x:

$$\nabla f(x) = \frac{1}{n} \sum_{i=1}^{n} \nabla f_i(x) \tag{7.16}$$

For each sample, the gradient then proposes a new point again:

$$x' = x - \alpha \nabla_x f_i(x) \tag{7.17}$$

Notice the subtle difference between formula 7.15 and 7.16 emphasizing that the gradient happens on a series of random samples rather than the entire dataset as a whole. This drops the computational cost for each iteration from O(n) to O(1). With the stochastic gradient a good estimate of the gradient with better computational cost, it is still inefficient. Deep Learning is using minibatches, or short batches. By breaking or grouping data into batches, the computational efficiency is improved. There are multiple optimization algorithms using batches, some of which are Adam, AdamW, Minibatch Stochastic Gradient Descient (SGD), ... etc. These are all considered adaptive optimizers and have become a default choice for training neural networks.

7.1.4. Neural Networks

Previously we introduced the concepts of inputs, a model with several parameters making predictions, that lead to one or more outputs. We can graphically represent this as shown in figure 7.3. This layered type of visualization is how Neural Networks are represented. Computations are by convention never considered on the input layer, so the number of

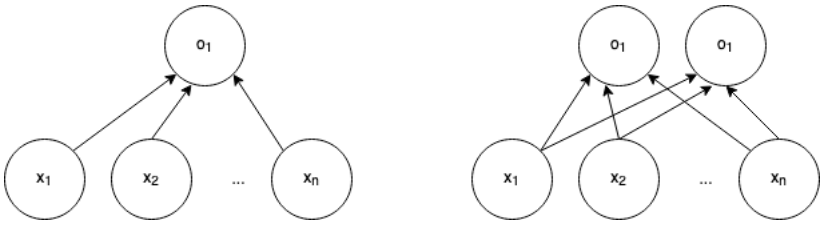

Figure 7.3: A Linear Regression Model with n inputs and 1 output on the left and a Classification with n inputs and 2 possible targets

layers for the models in figure 7.3 is one. Notice that each input is directly connected to each output. This indicates a linearity relation between the input and the output. Whilst common, this is not always true. Consider the cat image recognizing model, and assume the inputs $x_1 - x_n$ in the right model of figure 7.3 represent inputs that depict the RGB value at a certain pixel location. Higher input values would lead to more white in the image, not to a higher chance of the image being a cat. To mitigate this non-linearity problem, extra (hidden) layers can be added. Deep Learning networks differentiate themselves from normal neural networks by having more - deeper - layers. The final layer is called the *linear predictor* and the earlier ones the *representation* layers. Such multilayer architecture shown in figure 7.4 is called a *multilayer perceptron*, abbreviated as *MLP*. The shown neural network diagrams are fully connected. It has 4 inputs fully connected to 5 neurons on the hidden layer, making 20 parameters + 1 bias parameter. There are also 5 hidden layer neutrons fully connected to 3 output layer neurons, making 15 parameters and 1 bias. The MLP in Figure 7.4 has thus 37 parameters. Fully connected networks mean that every neuron (node) directly affects all other neurons in the layer above it. The hidden layer can learn any function it needs to do. But just like when writing software, where you do not want to write all your logic in one function, is it also not advisable to try and do everything in one wide hidden layer. A deeper network, with additional layers, can approximate functions

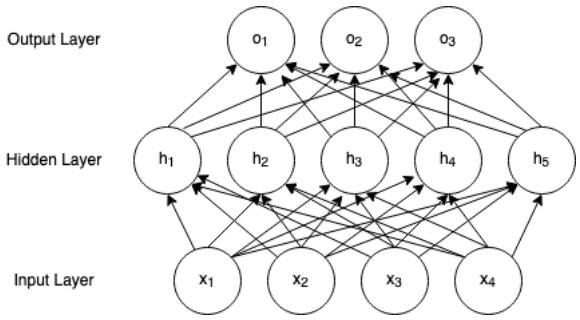

Figure 7.4: A Multilayer Perceptron (MLP) with 2 layers, 4 inputs, 1 hidden layer containing 5 units, and 3 outputs

more compactly [Zhang et al., 2021]. Computations flow through the neural network from the input layer, through intermediate layers until they finally arrive at the output layer. At each subsequent layer, calculations are made and intermediate variables are stored. This is called forward propagation. The most common method used to optimize all the parameters in the neural network is backpropagation. By looking at the loss function results, comparing the predicted output to the actual output, the network knows which neurons need to increase, and which ones need to decrease. It can do that by adjusting the previous layers weights and biases recursively, until the loss is at its lowest. In other words, backpropagation updates the weights of the network in reverse order (from the output layer back to the input) by computing gradients, starting with the gradients of the loss function. This gradient-based optimization method is the reason why we require the loss function to be derivable. Backpropagation reuses the previously stored values which creates the need to keep all calculated values in memory. It is because of this reason that training models requires a large amount of memory, and why the possible batch sizes are limited by the available memory.

7.1.5. Activation Functions

Activation functions are what decide if a connected neuron in the next layer should be activated or not, transforming inputs to outputs. The most common ones are the rectified linear unit (ReLU) and the Sigmoid function. The ReLU function filters out negative elements, and transforms them to zero, only keeping positive elements. The sigmoid function transforms the inputs to output values between 0 and 1, making it a good candidate for the output layer of classifiers where we want to see probabilities for each class.

7.1.6. Natural Language Processing

Representing words in software is not that hard, afterall they are just strings. What is harder is to represent their meaning. Up until 2012, words were represented as *One-Hot Vectors* [Stevens et al., 2020]. This represents a vector, with a value 0 for all possible words, except that one word you are trying to encode, which will be 1.

```
motel = [0 0 0 0 0 0 0 0 0 1 0 0 0 0 0]
hotel = [0 0 0 0 0 1 0 0 0 0 0 0 0 0 0]
```

Given the number of existing words in one language, the transformations of that word depending on how it is being used (eg. as adjective), and the never-ending introduction of

new words creates a near-infinite vector dimension problem. The second problem is that there is no similarity relation between them, a requirement if word similarity is needed. In 2013, [Mikolov et al., 2013] brought the word2vec algorithm. It allows words to be encoded as word vectors, able to express similarity to different words. These vectors are also sometimes called word embeddings. The central idea of word2vec is building these embeddings from a large body (or corpus) of continuous text. The algorithm starts with that large corpus of text with all words initially represented as random vectors. Next, the algorithm goes iteratively through each position in the text, where for each word in the text the words around it are looked at to be able and learn to predict the words around that word. In other words, predict the context of the word iterated over. This is the *skip-gram model* of word2vec. The other word2vec model is *continuous bag of words*. This model does the opposite; predict the center word based on the surrounding context words. Using either of these models, each iteration adjusts the word vector representations until the prediction accuracy is maximized. Finally, there is a good vector space representing the words and their similarities in the text.

7.1.7. BERT

While these vectors are generated based on context, the same word will be assigned the same word embedding, despite their semantic differences. The word *park* in the sentences *"I will park my car in front"* and *"We walked in the park"* is semantically completely different. Context-sensitive word representations such as ELMo [Peters et al., 2018] significantly improved the natural language processing tasks like question answering, sentiment analysis, named entity recognition, ... etc. The problem was these are very task-specific architectures. GPT (Generative Pre-Training) was a first effort in building a task-agnostic model that can do context-sensitive representations [Radford et al., 2018]. The problem GPT has is that it only works forward, or left-to-right. [Zhang et al., 2021] gives an easy-to-understand example of where this can be a problem. Consider the sentences *"I went to the bank to deposit money"* and *"I went to the bank to sit down"*. The context left of the word *bank* is identical so the word bank will be given the same representation. Subsequent words to the right are not considered for semantic context. BERT (Bidirectional Encoder Representations from Transformers) solves this problem. It encodes the context bidirectionally and is still being task-agnostic [Devlin et al., 2019]. To support a variety of natural language processing tasks, the BERT model can be fine-tuned similar to GPT without a complete task-specific model retraining like needed with ELMo.

Still, BERT can be pre-trained for usage in a specific domain (eg: medicine, high-tech literature with lots of acronyms, ... etc) but when the NLP task is using common English language, fine-tuning the original model pre-trained on BookCorpus and English Wikipedia [Zhu et al., 2015][Zhang et al., 2021] is sufficient.

Consider an input text for an NLP task like classification by fine-tuning BERT. BERT takes 3 types of input that together - through summation - form the BERT input sequence embeddings. The first input is called the *Token Embeddings* input. The input text is broken into its separate words - we call these tokens - by a tokenizer. When the text is split into tokens, there are a few special tokens expected for BERT to understand the beginning and end of an actual text sequence. The first important one is the classification token '[CLS]'. It

is always the first token of a sequence and thus indicates a new text sequence has begun. The next important special token is the separator token '[SEP]'. This indicates the end of a sequence. Lastly, there is the '[PAD]' token which is used for padding. BERT requires 512 tokens as input. When a text sequence is not 512 tokens long, it needs to be padded to make it 512 tokens. Longer text sequences, need truncating. These token embeddings are numerical floating-point representations of the tokens. BERT also needs an attention mask to be able and make sense of the input tokens. The attention mask tells the BERT Self-Attention mechanism which tokens to consider and which ones not. The attention mask uses a 1 for relevant tokens, and a 0 for padding tokens. The second type of input BERT uses is the *Segment Embeddings* input. This one is used for BERT to be able and distinguish between different sentences in one text input. Finally, there are the *Position Embeddings*, input which is generated internally in BERT to indicate order in the input data.

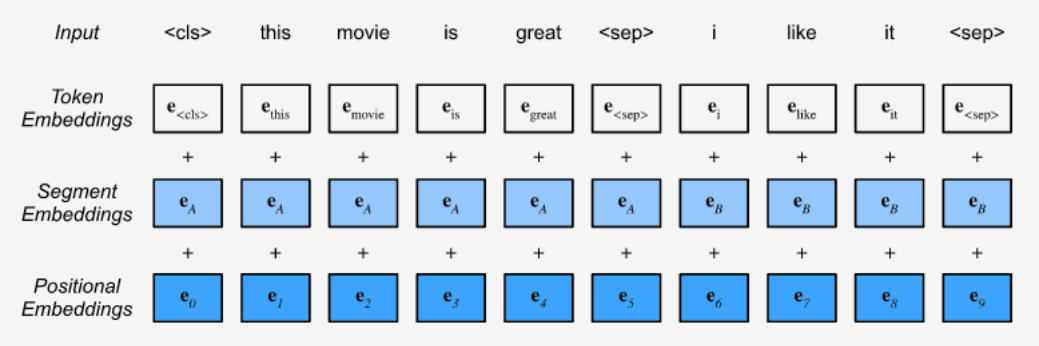

Figure 7.5: The BERT input sequence embeddings are the sum of the token embeddings, the segment embeddings, and the positional embeddings[Zhang et al., 2021]

To fine-tune the BERT pre-trained model for input text classification a small MLP is added connecting BERT its outputs to the Classifier MLP its inputs. The pre-trained BERT model becomes part of the new task specific fine-tuned model. This is visualized in Figure 7.6. The parameters of the MLP its output layer will be learned from scratch, and all other parameters of the MLP hidden layers and the BERT pre-trained model will be fine-tuned. Except those related to pre-training loss, these are not updated [Zhang et al., 2021].

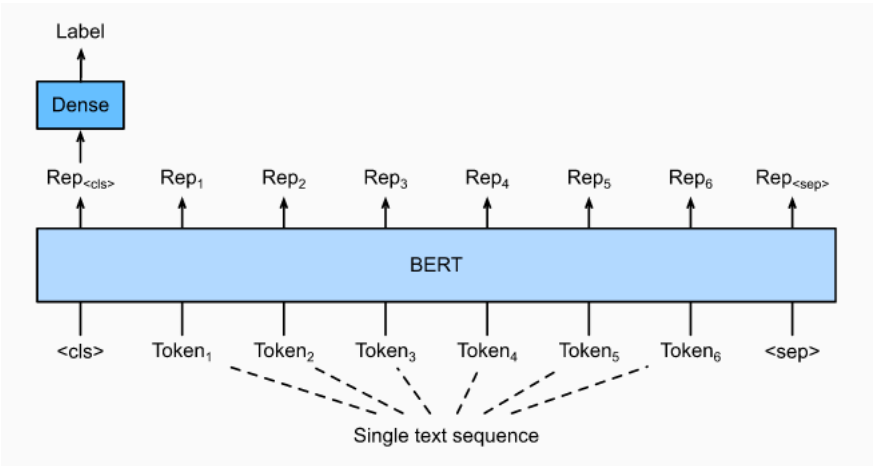

Figure 7.6: Fine-tuning BERT for single text classifications [Zhang et al., 2021]

7.1.8. Evaluation Metrics

To evaluate the accuracy of predictions there are several metrics we can look at. We evaluated the metrics precision, recall, and F1-score. The F1 measure specifically is a widely used one especially in classification scenarios, both binary and multi-class [Pillai et al., 2017][Buckland and Gey, 1994]. First, we remind the reader of the meaning of *True Positives, False Positives, True Negatives*, and *False Negatives* in the context of classification prediction. A True Positive (TP) represents a positive prediction of an actual positive case. A False Positive (FP) represents an incorrect positive prediction. This means the prediction was positive while the actual case was negative. A True Negative (TN) represents a correct negative prediction of a negative case. A False Negative (FN) represents an incorrect negative prediction because the actual case was positive.

The different scores in the output are calculated based on those values. The precision score equals **TP / (FP + TP)** [Pillai et al., 2017]. It represents the ability of a model to correctly predict the real positives out of all positive predictions made [Sasaki et al., 2007]. The recall score equals **TP / (FN+TP)** [Pillai et al., 2017]. In other words, it shows how good the model is at correctly predicting the positives out of all actual positives in the dataset [Sasaki et al., 2007]. The F1-score is a function of precision and recall score to measure the model its classification accuracy [Pillai et al., 2017]. **F1 Score = 2 * Precision Score * Recall Score / (Precision Score + Recall Score)**. An increase in the F1 metric means the precision and recall value increased for a model. A high F1 score indicates that the model is capable of handling class imbalance problems.

In the next section, we will leverage this theory to fine-tune BERT and build a multi-label classifier to predict veto voting.

7.2. The Veto Classifier by Topic

To build our classifier, we first create a focused classifier dataset based on the dataset we built in chapter 4. The structure of the focused dataset is of the form shown in table 7.1. The left column is the topic we will evaluate, and the right five columns have a value 0 or 1, not vetoed, or vetoed respectively by the given P-5 member. These five columns are the targets or labels for the classifier. Since a topic can be vetoed by all 5 permanent members at the same time, all 5 labels can be 1. This makes the classifier a multi-label classifier.

We build the focused classifier dataset by iterating over our entire dataset. For each row, we copy the topic and assume no P-5 member vetoed the topic. We then search if the resolution in the row was vetoed. If it was, we look up the resolution in the dataframe with state names. Finally, we check for each P-5 member if they are listed. If they are, the record is updated to '1' indicating the state did use a veto for the resolution.

```
...
meetings_df = pd.read_sql_table('meeting', con=engine)
resolutions_df = pd.read_sql_table('resolution', con=engine)
vetoes_df = pd.read_sql_table('vetocasts', con=engine)
states_df = pd.read_sql_table('state', con=engine)
```

Topic	USA	UK	France	China	Russia
Cyprus	0	0	0	0	1
The situation in the Comoros	0	0	1	0	0
...	0	0	0	0	0

Table 7.1: The dataset structure for the classifier

```
meetings_and_resolutions_df = resolutions_df.merge(
    meetings_df,
    how="inner",
    on=["meeting_id","year"]
)

vetoes_w_names_df = vetoes_df.merge(
    states_df,
    how="inner",
    on="state_id"
)

df = pd.DataFrame()

for index, row in meetings_and_resolutions_df.iterrows():
  df.loc[index,'topic'] = meetings_and_resolutions_df.loc[index,'topic'].strip()
  df.loc[index,'US'] = 0
  df.loc[index,'UK'] = 0
  ...

  if meetings_and_resolutions_df.loc[index, 'status'] == 'vetoed':
      resolution_to_check = meetings_and_resolutions_df.loc[index, 'draft_id']
      if vetoes_w_names_df['vetoed_resolution'].str.contains(
          resolution_to_check
      ).any():
          veto_voters = vetoes_w_names_df.query(
              f'vetoed_resolution=="{resolution_to_check}"'
          )['name']

          for veto_voter in veto_voters:
              if veto_voter == 'US':
                  df.loc[index, 'US'] = 1
              elif veto_voter == 'Russia':
                  df.loc[index, 'Russia'] = 1
              ..
```

The dataset is then split into a training and test dataset. We used the sklearn[1] module for this. We split at 25%, meaning the size of our test dataset would be around 25% of the

[1]https://scikit-learn.org

training dataset. We can verify this using the Pandas dataframe shape property: it gives us a matrix of n rows with m columns:

```
train_df, test_df = train_test_split(df, test_size=0.25)
train_df.shape, test_df.shape
```

((1872, 6), (625, 6))

In Figure 7.7 the overall distribution of topics in our dataset is shown. We see a big imbalance between the amount of vetoed and non-vetoed topics.

```
train_vetoed = train_df[train_df[LABEL_COLUMNS].sum(axis=1) > 0]
train_non_vetoed = train_df[train_df[LABEL_COLUMNS].sum(axis=1) == 0]

pd.DataFrame(dict(
    vetoed=[len(train_vetoed)],
    non_vetoed=[len(train_non_vetoed)]
)).plot(kind="barh")
```

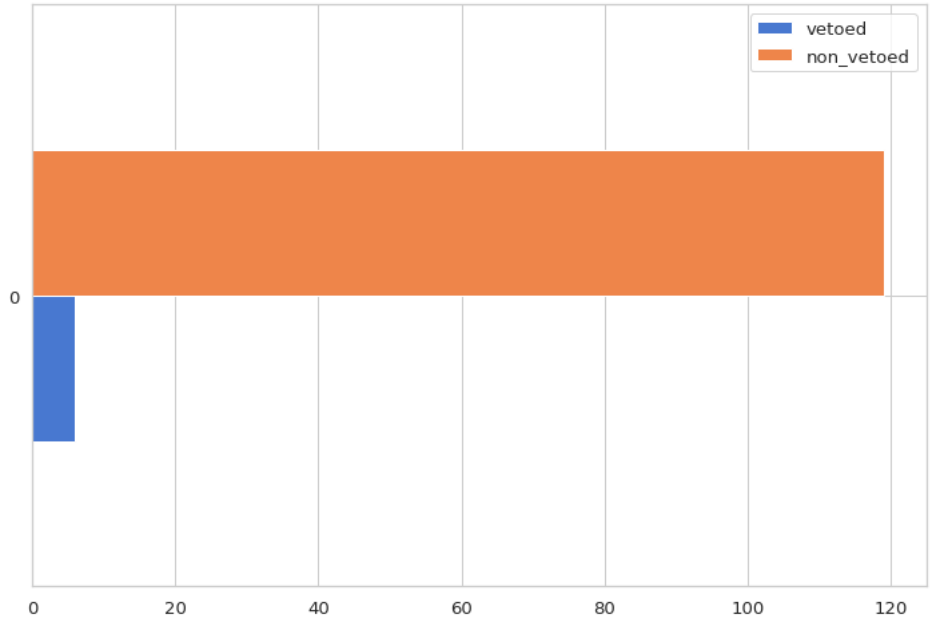

Figure 7.7: Data imbalance in the dataset

Such imbalance will make the model inaccurate. Intuitively, if only a fraction of what our model would see to learn is *'non-vetoed'*, it would have a high chance of being correct when it would always just predict *'non-vetoed'*. To counter this, we sampled a comparable amount of *'non-vetoed'* topics as well.

```
train_df = pd.concat([
    train_vetoed,
    # Counter the imbalance of way more non_vetoed resolutions
    train_non_vetoed.sample(200)
])
```

```
print(f"Number of vetoed samples: {len(train_vetoed)}")
print(f"Number of non-vetoed samples: {len(train_non_vetoed)}")

train_df.shape, test_df.shape
```

Number of vetoed samples: 103
Number of non-vetoed samples: 200
((303, 6), (625, 6))

The dataset is now better balanced. The test and training datasets now have the following amount of vetoes:

```
train_df[LABEL_COLUMNS].sum()
US        54.0
UK        16.0
France     7.0
China      9.0
Russia    41.0

test_df[LABEL_COLUMNS].sum()
US        16.0
UK         5.0
France     4.0
China      3.0
Russia    12.0
```

For our word embeddings, we use the BERT Large Uncased pre-trained model. [Devlin et al., 2019] found that the large variant outperforms the Base variant across all tasks it was subjected to, especially the ones with very little training data - like ours. They empirically found that models with larger models have an increased accuracy. BERT Base contains 100 million parameters, 12 layers, 768 hidden neurons, 12 attention heads compared to BERT Large Uncased having 340 Million parameters, 24 layers, 1024 hidden layers, and 16 activation heads.

Using the Large Uncased pre-trained model we can now tokenize our text input: the topics. For this we use the PyTorch Lightning research framework[2].

```
BERT_MODEL_NAME = "bert-large-uncased"
tokenizer = BertTokenizer.from_pretrained(BERT_MODEL_NAME)

class VetoVoteDataset(Dataset):
    # -- https://pytorch.org/docs/stable/data.html#torch.utils.data.Dataset

    def __init__(
        self,
        data: pd.DataFrame,
```

[2]https://www.pytorchlightning.ai/

```
        tokenizer: BertTokenizer,
        max_token_len: int = 128
    ):
        self.tokenizer = tokenizer
        self.data = data
        self.max_token_len = max_token_len

    def __len__(self):
        return len(self.data)

    def __getitem__(self, index: int):
        data_row = self.data.iloc[index]
        text = data_row.topic
        labels = data_row[LABEL_COLUMNS]

        encoding = self.tokenizer.encode_plus(
            text,
            add_special_tokens=True,
            max_length = self.max_token_len,
            return_token_type_ids=False,
            padding="max_length",
            truncation=True,
            return_attention_mask=True,
            return_tensors="pt"
        )

        return dict(
            text=text,
            input_ids=encoding['input_ids'].flatten(),
            attention_mask=encoding['attention_mask'].flatten(),
            labels=torch.FloatTensor(labels)

        )
```

The most interesting part is in the *__getitem__()* method which is calling the BertTokenizer *encode_plus()* method to tokenize the words in a sentence into token embeddings BERT can operate on. We explicitly tell the method to add padding tokens when a text is not 512 tokens, and to truncate if we have more than 512 tokens.

It also generates an attention mask that is bound to the tokens previously made. It is another Tensor of ones or zeros depending on whether a token is padding or not. This mask tells the BERT Self-Attention Mechanism to not consider these tokens in its interpretation of the text.

The following is an example topic to illustrate this process:

The situation in the Middle East, including the Palestinian question.

The BertTokenizer creates these tokens:

'[CLS]', 'the', 'situation', 'in', 'the', 'middle', 'east', ',', 'including', 'the', 'palestinian', 'question', '[SEP]', '[PAD]', '[PAD]', '[PAD]', '[PAD]', '[PAD]', '[PAD]', '[PAD]', ...

These are converted into numbers stored as a tensor.

CLS is *101*, *SEP 102*, and *PAD*ding tokens are represented as *0*: *tensor([101, 1996, 3663, 1999, 1996, 2690, 2264, 1010, 2164, 1996, 9302, 3160, 102, 0, 0, 0, 0, 0, 0, 0, ...])*

Remember the attention mask should only be 1 for those non-padding tokens:

tensor([1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, ...])

Next, the entire loading and preparation can be setup as a *LightningDataModule*[3]. DataModules are self-contained modules that can be reused. A call of the *setup()* can initiate data pre-cleaning, dataset splitting, ... etc. We have performed the splitting in a previous step already in order for inspection of the split datasets to be easier. The veto vote imbalance in our training and test datasets was discovered there.

```
class VetoVoteDataModule(pl.LightningDataModule):
    # -- https://pytorch-lightning.readthedocs.io/en/stable/extensions/
    # datamodules.html

    def __init__(
        self,
        tokenizer: BertTokenizer,
        df: pd.DataFrame,
        train_df: pd.DataFrame = None,
        test_df: pd.DataFrame = None,
        batch_size: int = 16,
        max_token_len: int = 128
    ):
        super().__init__()
        self.df = df
        self.train_df = train_df
        self.test_df = test_df
        self.tokenizer = tokenizer
        self.batch_size = batch_size
        self.max_token_len = max_token_len

    def setup(self, stage=None):

        if self.train_df is None or self.test_df is None:
            self.train_df, self.test_df = train_test_split(self.df, test_size=0.25)

        self.train_dataset = VetoVoteDataset(
            self.train_df,
```

[3]https://pytorch-lightning.readthedocs.io/en/stable/extensions/datamodules.html

```
            self.tokenizer,
            self.max_token_len
        )

        self.test_dataset = VetoVoteDataset(
            self.test_df,
            self.tokenizer,
            self.max_token_len
        )

    def train_dataloader(self):
        return DataLoader(
            self.train_dataset,
            batch_size=self.batch_size,
            shuffle=True,
            num_workers=2
        )
    ...
```

This VetoVoteDataModule can now be instantiated for when the model will be trained:

```
data_module = VetoVoteDataModule(tokenizer, df, train_df, test_df)
data_module.setup()
```

A class representation of the computational model itself can now be made. We do this using a *LightningModule* the PyTorch Lightning framework conveniently provides.

```
class VetoVoteTagger(pl.LightningModule):
    def __init__(self,
        n_classes: int,
        n_training_steps=None,
        n_warmup_steps=None
    ):
        super().__init__()
        self.bert = BertModel.from_pretrained(BERT_MODEL_NAME, return_dict=True)
        self.classifier = nn.Linear(self.bert.config.hidden_size, n_classes)
        self.n_training_steps = n_training_steps
        self.n_warmup_steps = n_warmup_steps
        self.criterion = nn.BCELoss()
    ...
    def forward(self, input_ids, attention_mask, labels=None):
        output = self.bert(input_ids, attention_mask=attention_mask)
        output = self.classifier(output.pooler_output)
        output = torch.sigmoid(output)
        loss = 0

        if labels is not None:
            loss = self.criterion(output, labels)
```

```
        return loss, output
    ...
```

The model uses the Bert Large Model as a base layer. To refine it, a linear layer is added which maps the BERT outputs as input and transforms them into an output of our 5 possible output classes. As activation function we use the Sigmoid function. It transforms its numerical input values into output values in the interval (0, 1), helpful to see probabilities. Finally, we chose what optimizer the scheduler should influence for training the model. We opted for the AdamW optimizer as an alternative to the popular Adam optimizer [Loshchilov and Hutter, 2019]. The reason for this is that research has found Adam to not generalize as well as the much slower Stochastic Gradient Descent (SGD) [Loshchilov and Hutter, 2019]. AdamW generalizes better and is much faster than SGD. The scheduler dynamically adjusts the learning rate of the optimizer during training.

We can now make an instance of our *VetoVoteTagger* class and train our model. We use a PyTorch Lightning Trainer for this which allows us to attempt multiple epochs and automatically pick the best model, stopping when it no longer improves.

```
model = VetoVoteTagger(
    n_classes=len(LABEL_COLUMNS),
    n_warmup_steps=warmup_steps,
    n_training_steps=total_training_steps
)

trainer = pl.Trainer(
    logger=logger,
    callbacks=[early_stopping_callback, checkpoint_callback],
    max_epochs=N_EPOCHS,
    gpus=1,
    progress_bar_refresh_rate=30
)

trainer.fit(model, data_module)
```

We see the loss dropping quickly during each subsequent epoch until it stabilized at 0.09701:
Epoch 0, global step 18: test_loss reached 0.49369 (best 0.49369)
Epoch 1, global step 37: test_loss reached 0.36364 (best 0.36364)
Epoch 2, global step 56: test_loss reached 0.24172 (best 0.24172)
Epoch 3, global step 75: test_loss reached 0.15349 (best 0.15349)
Epoch 4, global step 94: test_loss reached 0.12913 (best 0.12913)
Epoch 5, global step 113: test_loss was not in top 1
Epoch 6, global step 132: test_loss reached 0.11403 (best 0.11403)
Epoch 7, global step 151: test_loss reached 0.09701 (best 0.09701)
Epoch 8, global step 170: test_loss was not in top 1
Epoch 9, global step 189: test_loss was not in top 1

The model can now be tested on a few topics. The topics were existing samples from

State	Prediction TestTopic1	Prediction TestTopic2	Prediction TestTopic3
USA	**0.756567120552063**	0.0691634863615036	0.20302242040634155
UK	0.042052071541547775	0.04315514117479324	0.10167007148265839
France	0.02439190074801445	0.03998158127069473	0.2611343264579773
China	0.0282673891633749	0.0501612089574337	**0.4562782943248749**
Russia	0.04960155114531517	0.17693357169628143	**0.7685662508010864**

Table 7.2: The veto predictions on test topics

the dataset, and one made-up one.

- **TestTopic1:** "The situation in the Middle East, including the Palestinian question"
- **TestTopic2:** "The coming home of Santa Claus"
- **TestTopic3:** "Middle East situation - Syria"

Based on the EDA in chapter 5, we expect our model to predict for TestTopic1 a high chance for veto of the USA. For TestTopic2, the prediction should have a very low probability for all states, and for TestTopic3, we expect high probability for both China and Russia. Table 7.2 shows the results for each prediction.

The prediction results of this test run are quite realistic given our test topics. They completely match the reality. A classification report for each class gives more insights and we can see that our model actually is not working that well.

```
              precision    recall  f1-score   support

          US       0.27      0.50      0.35        16
          UK       0.04      0.20      0.07         5
      France       0.00      0.00      0.00         4
       China       0.00      0.00      0.00         3
      Russia       0.00      0.00      0.00        12

   micro avg       0.17      0.23      0.19        40
   macro avg       0.06      0.14      0.08        40
weighted avg       0.11      0.23      0.15        40
 samples avg       0.01      0.01      0.01        40
```

The above classification report shows 0.00 for a large amount of classes and metric. In the support column we see there are only total 40 positive cases in our test dataset. Most of the time, the model incorrectly classified these as negative (non-veto) topics. In other words, of the 16 positive samples USA really cast a veto, only 35% of those ended up being correct predictions. Of the 12 real vetoes Russia made, the model predicted no veto for all of them. As a net result, we conclude the performance of our model is not good.

The dataset could be split more, but more entries in the test dataset also means less items in the training dataset. It is easy to see that the learning efficiency is limited to the available data. We have tried different split sizes and had increasingly better results as the

ratio went higher. We however found that if we go above 25% with this dataset, the accuracy results are going down again. Our empirical tests show that with enough training on realistic data, we would be able to build a reliable computational model to do veto vote prediction. However, today the limiting factor is the amount of data. As [Zhang et al., 2021] mentions: *Generally, the more data we have, the easier our job becomes. When we have more data, we can train more powerful models and rely less heavily on pre-conceived assumptions.*.

7.3. The Veto Classifier by Resolution Content

As described in the beginning of this section, the usage of veto is really correlated to the topic and the resolution under discussion its content. In this section we will do the same as in the previous section. The main difference is the structure of the dataset. Instead of the topic as input, we want to have the resolution text as input. Since BERT is limited to 512 tokens [Sun et al., 2019], these long texts (some over 30k words) would not fit in the transformer. We extract the middle portion of the resolution text, making an assumption that is where the most interesting content is.

```
def extract_middle_text(text: str, words: int = 512) -> str:
    '''
    Extracts the middle portion of a text longer than 512 tokens
    '''

    tokens = text.split()

    # Just return the original text if it's not longer than 512
    # words... .
    if len(tokens) <= words:
        return text

    # More words than the max amount of tokens
    half_length_from_center = words // 2

    start_left = len(tokens) // 2 - half_length_from_center #256
    end_right  = len(tokens) // 2 + half_length_from_center #256

    word_list_in_center = tokens[ start_left : end_right ]

    return ' '.join(word_list_in_center)
```

We split the training and test dataset again at 25%. The true datasets are unfortunately very small, since between 1994 and 2021, only 37 vetoed resolutions are recorded. We are limited to the period after 1994 as we explained in chapter 5 that scanned resolutions prior to 1994 are not OCRd reliably. Contrast this with 1599 not-vetoed resolutions and there is again a significant imbalance. We sampled 50 non-vetoed resolutions in the training dataset. The training and test datasets have the following true veto vote values to train against:

```
train_df[LABEL_COLUMNS].sum()

USA        13.0
UK          0.0
France      0.0
China       9.0
Russia     17.0

val_df[LABEL_COLUMNS].sum()

USA        2.0
UK         0.0
France     0.0
China      2.0
Russia     3.0
```

Note that there are no veto votes for UK and France. As explained in chapter 5, after 1994 only US, Russia, and China have used their veto.

After 6 epochs, we reached a loss score of 0.05927. However, the F1-score is again not satisfactory.

	precision	recall	f1-score	support
USA	0.11	0.50	0.18	2
UK	0.00	0.00	0.00	0
France	0.00	0.00	0.00	0
China	0.00	0.00	0.00	2
Russia	0.00	0.00	0.00	3
micro avg	0.09	0.14	0.11	7
macro avg	0.02	0.10	0.04	7
weighted avg	0.03	0.14	0.05	7
samples avg	0.00	0.00	0.00	7

The results are more than underwhelming, again because of an insufficiently large dataset.

7.4. SUMMARY

In this chapter we tried to achieve research goal ***G4 - "We know what is needed to build a computational model to predict (malicious) veto voting"*** and find an answer to research question ***SRQ4 - "Is it possible to build a computational model to predict veto voting with the current data?"***. We built a multi-label classifier based on the BERT Large model by fine-tuning it. The results show it is possible to predict which UNSC Permanent Member would cast a veto given a topic. Overall there was a low F1-score. This relates to low accuracy. US is the country with the most vetoes cast, and because of this shows up most in the dataset. The F1-score was the highest for classifications to that country. Finally, we also tried to do

a multi-label classification based on resolution text. Afterall, if a computational model can predict based on a short sentence a topic is, we can assume it will do this even better on a full text.

In both scenarios we were limited by our small dataset, even more so for the experiment where we based ourselves on resolution text. This was already expected by the SMEs in chapter 6. We do believe that if we would have a bigger dataset and if, to the point made by the SMEs in chapter 6, a lot more discussions would be brought in front of the public UNSC meetings, it is entirely possible to make such an intelligent system. That bigger dataset can then also allow the research community to identify the parameters in the text such that, when a veto is predicted, the system can flag a potential biased veto and trigger any control measures such as the proposed ones in chapter 6.

8

CONCLUSIONS & FUTURE WORK

8.1. CONCLUSIONS

In this research, we wanted to evaluate how we can detect biased veto voting in the UN Security Council (UNSC). To structure this research, we created five sub-research questions to answer the main research question ***RQ - "How to build a set of data analytics models to detect and analyze bias in the UN Security Council?"***.

In sub-research question ***SRQ2 - "What UN Security Council data is available to work with?"*** we concluded there was no data available that captures what we need for this type of research. We built a dataset by means of un.org web scraping which made it possible for us to query the details, and texts of UNSC meetings and their discussed resolutions. The correctness of our dataset gathering methodology was validated by sample proofing, and finding data inconsistencies that the UN Digital Library confirmed and resolved. To support reproducible science the dataset is available on GitHub[1], together with all the Python code to rebuild it if needed.

To answer sub-research question ***SRQ3 - "What can be learned from a data analysis on the UN Security Council resolutions and meetings?"*** we performed an exploratory data analysis (EDA) on the gathered data. We concluded that Russia and the USA are the two permanent Security Council members using their veto power the most. The analysis of veto by topic and veto by word frequency gives an indication of strong negative bias towards certain topics, and even towards certain ethnic groups. In particular, Palestine and Syria, by the USA and Russia respectively, often accompanied by high-frequency words *Arab, Terrorist, Weapon, ...* when the veto power is used. Other non-vetoed topics use a more general language that represents the primary mission of the Security Council more. This is validated as accurate since we got the same conclusion using three distinctly different approaches. We also concluded that meetings, where a veto is cast, are longer. This is presumably due to longer speeches to defend a veto or to express disappointment and frustration caused by it. This led to the analysis of sentiment polarity and subjectivity. We found that in vetoed meetings, a more neutral and objective language is used, contrary to what we assumed earlier.

[1] https://github.com/cvanlabe/MScThesisSE

The next two questions we handled were ***SRQ1 - "What is biased veto voting in the UN Security Council?"*** and ***SRQ5 - "Which control measures or actions could be considered when bias is detected?"***. We interviewed academics with expertise in international relations and politics, as well as government representatives to the UN. We learned that bias is by definition present in the UNSC since any vote is a form of preference and therefore biased. Bias is not necessarily a problem as long as it does not favor states their self-interest over international law or humanitarian issues. The SMEs consider a veto vote going against international law or blocking humanitarian aid unjustified or illegitimate. We discussed what a good consequence could be for such veto. One suggestion made by the experts was a super veto which vetoes an unjustified or illegitimate veto. Another suggestion by ourselves was to trigger the Uniting for Peace resolution to bring the resolution in front of the much larger UN General Assembly. The results of these interviews are also validated since the responses were mostly unanimous and in agreement amongst interview participants. Any outlier responses were more personal opinion-based. Those were explicitly called out in the report, and not considered as input for other research goals.

We also learned during the interviews that most discussions happen behind closed doors, making it challenging to properly train an intelligent model on a sufficient amount of data. Despite this recognized limitation, we tried to build a deep learning computational model that predicts veto votes based on a topic or a resolution text. This, to find an answer to sub-research question ***SRQ4 - "Is it possible to build a computational model to predict veto voting using the current data?"***. Our results show that it is conceptually possible to build a model that can predict a veto vote. Our model did however not have sufficient accuracy as shown by a low F1-score, which we used as primary means for validation. The main reason is that the current dataset is too small. This confirmed the suspicion of the subject matter experts that it is not immediately possible to build an intelligent machine due to the low amount of externally published diplomatic data.

Finally, we can now formulate an answer to the main research question ***RQ - "How to build a set of data analytics models to detect and analyze bias in the UN Security Council?"***. First, a sufficiently large dataset needs to become available. We set the stage but more data needs to be published or added. We hope the academic community can help grow the data available, or that interested UN member states deliberately go for more public vetoes rather than the invisible veto as explained in chapter 6. Then, a deep learning multi-label classifier can predict any possible veto usage by permanent members based on a resolution text or topic. The final requirement would then be to combine this prediction with a, still to be researched (see Future Work & Discussion), topic detection in the context of the UN. If the topic is around international law or humanitarian issues, and the veto was predicted, control and mitigation of that veto can be prepared or the veto can be neutralized immediately.

In summary, we learned how to build a set of data analytics models to detect and analyze bias in the UN Security Council. Unfortunately, we have to recognize that with the limited amount of data published prediction accuracy will not be of good enough quality. We consider it a beginning for future work to optimize the model, add data, or involvement in different lines of research. We also understand that such intelligent model, while aca-

demically interesting, is unlikely to be ever accepted. It would diminish the power of the P-5, the five permanent members of the UN Security Council, and let that power be the requirement they had to originally join the UNSC.

8.2. Future Work & Discussion

The biggest roadblock of our research has been enough qualitative data. We found there is existing research on how to acquire additional data using generative deep learning techniques [Anaby-Tavor et al., 2020]. There are also the advanced capabilities of the new GPT-3 language model [Brown et al., 2020] with 175 billion parameters that may be able to generate additional textual content. We did not explore this further but wonder if it would be of benefit. We have to consider that given the probable refusal of such a computational model by the UN Security Council its permanent members, artificially generating data could introduce bias. If not, it can be accused of it and therefore be easily dismissed. Alternatively, the resolution texts we have since 1946 could be manually reviewed and re-entered. That way the artificial limit of reliable data only after the year 1994 is removed, leading to more data to work with.

We believe the focus should be on the multi-label classifier by resolution text. We noticed in the dataset that meeting topics may occur more than once, despite a different underlying resolution. Topics are also short in nature. Resolution texts however are unique and longer. As such, they hold more data points to learn from. The BERT model is limited to 512 tokens [Sun et al., 2019] while resolutions exist counting over 30000 (thirty thousand) words. BERT is not suitable for long text classification due to the amount of memory it takes to store the activations for backpropagation during training [Ding et al., 2020]. Moreover, the computational complexity cost of $O(n^2)$ quickly increases with every word the text grows [Ding et al., 2020]. In our research chapter 7, we extracted 512 tokens from the middle of the resolution text. A random decision, assuming there is more relevant data after the introduction and before the ending. This did not lead to satisfactory results. There is existing research into long text transformers [Tay et al., 2020] [Yang et al., 2020] but given the work done, this too is considered to be a future research objective. Future research could investigate what the best long-text classification methods are, and if these can contribute to making the multi-label classifiers in our research more accurate.

Finally, the classifier prototype in chapter 7 is only focusing on predicting the usage of veto, not on controlling or mitigating biased veto voting. If we consider what the subject matter experts in chapter 6 consider as biased, or rather unjustified, it would be interesting to explore what machine learning techniques can be used to semantically analyze whether a resolution or discussion is concerned with international law or humanitarian issues. If it is, to then evaluate if and how to give further consequence to such veto. This could then lead to ML being used as a benevolent capability in the context of international relations, allowing stakeholders to control and give consequence to a biased veto.

BIBLIOGRAPHY

The un.org veto page. https://research.un.org/en/docs/sc/quick/. 4

Ateret Anaby-Tavor, Boaz Carmeli, Esther Goldbraich, Amir Kantor, George Kour, Segev Shlomov, Naama Tepper, and Naama Zwerdling. Do Not Have Enough Data? Deep Learning to the Rescue! *Proceedings of the AAAI Conference on Artificial Intelligence*, 34(05):7383–7390, April 2020. ISSN 2374-3468. doi: 10.1609/aaai.v34i05.6233. URL https://ojs.aaai.org/index.php/AAAI/article/view/6233. Number: 05. i

Kevin Arceneaux. Cognitive Biases and the Strength of Political Arguments. *American Journal of Political Science*, 56(2):271–285, 2012. ISSN 1540-5907. doi: https://doi.org/10.1111/j.1540-5907.2011.00573.x. URL http://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-5907.2011.00573.x. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1540-5907.2011.00573.x. 9

Pepa Atanasova, Preslav Nakov, Lluís Màrquez, Alberto Barrón-Cedeño, Georgi Karadzhov, Tsvetomila Mihaylova, Mitra Mohtarami, and James Glass. Automatic Fact-Checking Using Context and Discourse Information. *J. Data and Information Quality*, 11(3):1–27, July 2019. ISSN 1936-1955, 1936-1963. doi: 10.1145/3297722. URL https://dl.acm.org/doi/10.1145/3297722. 5, 6

Michelle Benson and Jacob D. Kathman. United Nations Bias and Force Commitments in Civil Conflicts. *Journal of Politics*, 76(2):350–363, April 2014. ISSN 00223816. doi: 10.1017/S0022381613001497. URL https://search.ebscohost.com/login.aspx?direct=true&db=afh&AN=95055197&site=ehost-live. Publisher: The Southern Political Science Association. 1, 7, 29, 38, 50, 52

Tom B. Brown, Benjamin Mann, Nick Ryder, Melanie Subbiah, Jared Kaplan, Prafulla Dhariwal, Arvind Neelakantan, Pranav Shyam, Girish Sastry, Amanda Askell, Sandhini Agarwal, Ariel Herbert-Voss, Gretchen Krueger, Tom Henighan, Rewon Child, Aditya Ramesh, Daniel M. Ziegler, Jeffrey Wu, Clemens Winter, Christopher Hesse, Mark Chen, Eric Sigler, Mateusz Litwin, Scott Gray, Benjamin Chess, Jack Clark, Christopher Berner, Sam McCandlish, Alec Radford, Ilya Sutskever, and Dario Amodei. Language Models are Few-Shot Learners. May 2020. URL https://arxiv.org/abs/2005.14165v4. i

Michael Buckland and Fredric Gey. The relationship between Recall and Precision. *Journal of the American Society for Information Science*, 45(1):12–19, 1994. ISSN 1097-4571. doi: 10.1002/(SICI)1097-4571(199401)45:1<12::AID-ASI2>3.0.CO;2-L. _eprint: https://asistdl.onlinelibrary.wiley.com/doi/pdf/10.1002/%28SICI%291097-4571%28199401%2945%3A1%3C12%3A%3AAID-ASI2%3E3.0.CO%3B2-L. 74

Peter W. Cardon, Haibing Ma, and Carolin Fleischmann. Recorded Business Meetings and AI Algorithmic Tools: Negotiating Privacy Concerns, Psychological Safety, and Control. *International Journal of Business Communication*, page 23294884211037009, August

2021. ISSN 2329-4884. doi: 10.1177/23294884211037009. URL https://doi.org/10.1177/23294884211037009. Publisher: SAGE Publications Inc. 6

A. J. Carswell. Unblocking the UN Security Council: The Uniting for Peace Resolution. *Journal of Conflict and Security Law*, 18(3):453–480, December 2013. ISSN 1467-7954, 1467-7962. doi: 10.1093/jcsl/krt016. URL https://academic.oup.com/jcsl/article-lookup/doi/10.1093/jcsl/krt016. 1, 3, 4

Wietse de Vries, Andreas van Cranenburgh, Arianna Bisazza, Tommaso Caselli, Gertjan van Noord, and Malvina Nissim. Bertje: A dutch bert model, 2019. 7

Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding. *arXiv:1810.04805 [cs]*, May 2019. URL http://arxiv.org/abs/1810.04805. arXiv: 1810.04805. 6, 72, 77

Ming Ding, Chang Zhou, Hongxia Yang, and Jie Tang. Cogltx: Applying bert to long texts. *Advances in Neural Information Processing Systems*, 33:12792–12804, 2020. i

Jack Donnelly. Human Rights at the United Nations 1955–85: The Question of Bias. *Int Stud Q*, 32(3):275–303, September 1988. ISSN 0020-8833. doi: 10.2307/2600444. URL http://academic.oup.com/isq/article/32/3/275/1853923. Publisher: Oxford Academic. 7, 8, 64

Erich Gamma, Richard Helm, Ralph Johnson, and John M. Vlissides. *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley Professional, 1 edition, 1994. ISBN 0201633612. URL http://www.amazon.com/Design-Patterns-Elements-Reusable-Object-Oriented/dp/0201633612/ref=ntt_at_ep_dpi_1. 20

Ian Goodfellow, Yoshua Bengio, and Aaron Courville. *Deep Learning*. MIT Press, 2016. http://www.deeplearningbook.org. 65, 66

Alexander HAIG. *Caveat: realism, Reagan and foreign policy*. Weidenfeld & Nicolson, London, 1st ed. edition edition, January 1984. ISBN 978-0-297-78384-8. 9

John K Hord. Did Jerusalem Relocate? *Comparative Civilizations Review*, 52(52):41, 2005. 9

Madeleine O. Hosli and Thomas Dörfler. Why is change so slow? Assessing prospects for United Nations Security Council reform. *Journal of Economic Policy Reform*, 22(1):35–50, January 2019. ISSN 1748-7870, 1748-7889. doi: 10.1080/17487870.2017.1305903. URL https://www.tandfonline.com/doi/full/10.1080/17487870.2017.1305903. 4

Robert Jervis. Perception and misperception in international politics. by robert jervis. (princeton, n.j.: Princeton university press, 1976. pp. xii 445. 22.50, *cloth*;11.50, paper.). *American Political Science Review*, 72(2):793–794, 1976. doi: 10.2307/1954252. 8

DOMINIC JOHNSON and DOMINIC TIERNEY. In the eye of the beholder: victory and defeat in US military operations. In *Understanding Victory and Defeat in Contemporary War*. Routledge, 2006. ISBN 978-0-203-96768-3. Num Pages: 31. 62

Gabbrielle M. Johnson. Algorithmic bias: on the implicit biases of social technology. *Synthese*, 198(10):9941–9961, October 2021. ISSN 1573-0964. doi: 10.1007/s11229-020-02696-y. URL http://link.springer.com/article/10.1007/s11229-020-02696-y. Company: Springer Distributor: Springer Institution: Springer Label: Springer Number: 10 Publisher: Springer Netherlands. 7

Shafiq Joty, Giuseppe Carenini, and Raymond T. Ng. CODRA: A novel discriminative framework for rhetorical analysis. *Computational Linguistics*, 41(3):385–435, September 2015. doi: 10.1162/COLI_a_00226. URL https://www.aclweb.org/anthology/J15-3002. 6

Armand Joulin, Edouard Grave, Piotr Bojanowski, Matthijs Douze, Hérve Jégou, and Tomas Mikolov. Fasttext.zip: Compressing text classification models. *arXiv preprint arXiv:1612.03651*, 2016a. 31

Armand Joulin, Edouard Grave, Piotr Bojanowski, and Tomas Mikolov. Bag of tricks for efficient text classification. *arXiv preprint arXiv:1607.01759*, 2016b. 31

Peeter J Kirs, Kurt Pflughoeft, and Galen Kroeck. A process model cognitive biasing effects in information systems development and usage. *Information & Management*, 38(3):153–165, January 2001. ISSN 0378-7206. doi: 10.1016/S0378-7206(00)00062-8. URL https://www.sciencedirect.com/science/article/pii/S0378720600000628. 7

Andrew Kydd. Which Side Are You On? Bias, Credibility, and Mediation. *American Journal of Political Science*, 47(4):597–611, 2003. ISSN 1540-5907. doi: https://doi.org/10.1111/1540-5907.00042. URL http://onlinelibrary.wiley.com/doi/abs/10.1111/1540-5907.00042. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/1540-5907.00042. 9

Quoc V. Le and Tomas Mikolov. Distributed representations of sentences and documents, 2014. 7

Mario Li Vigni, Caterina Durante, and Marina Cocchi. Chapter 3 - Exploratory Data Analysis. In Federico Marini, editor, *Data Handling in Science and Technology*, volume 28 of *Chemometrics in Food Chemistry*, pages 55–126. Elsevier, January 2013. doi: 10.1016/B978-0-444-59528-7.00003-X. URL https://www.sciencedirect.com/science/article/pii/B978044459528700003X. 29

Bing Liu, Minqing Hu, and Junsheng Cheng. Opinion observer: analyzing and comparing opinions on the Web. In *Proceedings of the 14th international conference on World Wide Web*, WWW '05, pages 342–351, New York, NY, USA, May 2005. Association for Computing Machinery. ISBN 978-1-59593-046-0. doi: 10.1145/1060745.1060797. URL http://doi.org/10.1145/1060745.1060797. 6

Ilya Loshchilov and Frank Hutter. Decoupled Weight Decay Regularization. *arXiv:1711.05101 [cs, math]*, January 2019. URL http://arxiv.org/abs/1711.05101. arXiv: 1711.05101. 81

Vincent Menger, Marco Spruit, Roel van Est, Eline Nap, and Floor Scheepers. Machine Learning Approach to Inpatient Violence Risk Assessment Using Routinely Collected Clinical Notes in Electronic Health Records. *JAMA Network Open*, 2(7):e196709, July 2019.

ISSN 2574-3805. doi: 10.1001/jamanetworkopen.2019.6709. URL https://doi.org/10.1001/jamanetworkopen.2019.6709. 7

Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean. Efficient estimation of word representations in vector space, 2013. 72

Saif M. Mohammad and Peter D. Turney. Crowdsourcing a Word–Emotion Association Lexicon. *Computational Intelligence*, 29(3):436–465, 2013. ISSN 1467-8640. doi: 10.1111/j.1467-8640.2012.00460.x. URL http://onlinelibrary.wiley.com/doi/abs/10.1111/j.1467-8640.2012.00460.x. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1467-8640.2012.00460.x. 6

Pablo Mosteiro, Emil Rijcken, Kalliopi Zervanou, Uzay Kaymak, Floortje Scheepers, and Marco Spruit. Machine learning for violence risk assessment using dutch clinical notes. *Journal of Artificial Intelligence for Medical Sciences*, 2:44–54, 2021. ISSN 2666-1470. doi: https://doi.org/10.2991/jaims.d.210225.001. URL https://doi.org/10.2991/jaims.d.210225.001. 7, 13

F. S. Northedge. *The League of Nations: its life and times 1920 - 1946*. Holmes & Meier, New York, NY, 1986. ISBN 978-0-8419-1065-2. OCLC: 695030455. 3

Sahar Okhovat. *The United Nations Security Council: its veto power and its reform*. Centre for Peace and Conflict Studies, The University of Sydney, 2012. 1, 3, 4

Matthew E. Peters, Mark Neumann, Mohit Iyyer, Matt Gardner, Christopher Clark, Kenton Lee, and Luke Zettlemoyer. Deep contextualized word representations. In *Proc. of NAACL*, 2018. 72

Ignazio Pillai, Giorgio Fumera, and Fabio Roli. Designing multi-label classifiers that maximize f measures: State of the art. *Pattern Recognition*, 61:394–404, 2017. ISSN 0031-3203. doi: https://doi.org/10.1016/j.patcog.2016.08.008. URL https://www.sciencedirect.com/science/article/pii/S0031320316302217. 74

Alexandra Guedes Pinto, Henrique Lopes Cardoso, Isabel Margarida Duarte, Catarina Vaz Warrot, and Rui Sousa-Silva. Biased Language Detection in Court Decisions. In Cesar Analide, Paulo Novais, David Camacho, and Hujun Yin, editors, *Intelligent Data Engineering and Automated Learning – IDEAL 2020*, Lecture Notes in Computer Science, pages 402–410, Cham, 2020. Springer International Publishing. ISBN 978-3-030-62365-4. doi: 10.1007/978-3-030-62365-4_38. 6, 13

Sushree Bibhuprada B. Priyadarshini, Amiya Bhusan Bagjadab, and Brojo Kishore Mishra. A Brief Overview of Natural Language Processing and Artificial Intelligence. In *Natural Language Processing in Artificial Intelligence*. Apple Academic Press, 2020. ISBN 978-0-367-80849-5. Num Pages: 14. 34

Reid Pryzant, Richard Diehl Martinez, Nathan Dass, Sadao Kurohashi, Dan Jurafsky, and Diyi Yang. Automatically Neutralizing Subjective Bias in Text. *Proceedings of the AAAI Conference on Artificial Intelligence*, 34(01):480–489, April 2020. ISSN 2374-3468. doi: 10.1609/aaai.v34i01.5385. URL https://www.aaai.org/ojs/index.php/AAAI/article/view/5385. Number: 01. 5, 13

Alec Radford, Karthik Narasimhan, Tim Salimans, and Ilya Sutskever. Improving language understanding by generative pre-training (2018), 2018. 72

Steven B. Redd and Alex Mintz. Policy Perspectives on National Security and Foreign Policy Decision Making: Policy Perspectives. *Policy Stud J*, 41:S11–S37, April 2013. ISSN 0190292X. doi: 10.1111/psj.12010. URL http://doi.wiley.com/10.1111/psj.12010. 8

Jonathan Renshon and Stanley A. Renshon. The Theory and Practice of Foreign Policy Decision Making. *Political Psychology*, 29(4):509–536, August 2008. ISSN 0162895X, 14679221. doi: 10.1111/j.1467-9221.2008.00647.x. URL http://doi.wiley.com/10.1111/j.1467-9221.2008.00647.x. 8

Ellen Riloff and Janyce Wiebe. Learning extraction patterns for subjective expressions. In *Proceedings of the 2003 Conference on Empirical Methods in Natural Language Processing*, pages 105–112, 2003. URL https://www.aclweb.org/anthology/W03-1014. 6

Sebastian Ruder, Matthew E. Peters, Swabha Swayamdipta, and Thomas Wolf. Transfer Learning in Natural Language Processing. In *Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Tutorials*, pages 15–18, Minneapolis, Minnesota, June 2019. Association for Computational Linguistics. doi: 10.18653/v1/N19-5004. URL https://aclanthology.org/N19-5004. 6

Yutaka Sasaki et al. The truth of the f-measure. 2007. *URL: https://www. cs. odu. edu/˜ mukka/cs795sum09dm/Lecturenotes/Day3/F-measure-YS-26Oct07. pdf [accessed 2021-05-26]*, 2007. 74

Isabella Seeber, Lena Waizenegger, Stefan Seidel, Stefan Morana, Izak Benbasat, and Paul Benjamin Lowry. Collaborating with Technology-Based Autonomous Agents: Issues and Research Opportunities. SSRN Scholarly Paper ID 3504587, Social Science Research Network, Rochester, NY, January 2020. URL https://papers.ssrn.com/abstract=3504587. 7

Kacper Sokol and Peter Flach. You only write thrice: Creating documents, computational notebooks and presentations from a single source, 2021. 30

Eli Stevens, Luca Antiga, and Thomas Viehmann. *Deep Learning with PyTorch*. 2020. URL https://pytorch.org/assets/deep-learning/Deep-Learning-with-PyTorch.pdf. 71

Chi Sun, Xipeng Qiu, Yige Xu, and Xuanjing Huang. How to Fine-Tune BERT for Text Classification? In Maosong Sun, Xuanjing Huang, Heng Ji, Zhiyuan Liu, and Yang Liu, editors, *Chinese Computational Linguistics*, Lecture Notes in Computer Science, pages 194–206, Cham, 2019. Springer International Publishing. ISBN 978-3-030-32381-3. doi: 10.1007/978-3-030-32381-3_16. 7, 83, i

Yi Tay, Mostafa Dehghani, Samira Abnar, Yikang Shen, Dara Bahri, Philip Pham, Jinfeng Rao, Liu Yang, Sebastian Ruder, and Donald Metzler. Long Range Arena: A Benchmark for Efficient Transformers. *arXiv:2011.04006 [cs]*, November 2020. URL http://arxiv.org/abs/2011.04006. arXiv: 2011.04006. i

The International Bill of Human Rights. The international bill of human rights. page 73 p., Jun 1996. URL http://digitallibrary.un.org/record/236856. On cover: World campaign for human rights. 8, 64

Alexandre Torres. Essential notation for object-relational mapping. 2014. URL https://lume.ufrgs.br/handle/10183/97116. Accepted: 2014-07-02T02:06:51Z. 20

UN. Charter of the United Nations, August 2015. URL https://www.un.org/en/charter-united-nations/index.html. 3, 4, 60

MIJA Valeriu. CRISIS OF THE UNITED NAT IONS SECURITY COUNCIL. page 7, February 2018. 3

Thomas G. Weiss. The illusion of UN Security Council reform. *The Washington Quarterly*, 26(4):147–161, September 2003. ISSN 0163-660X. doi: 10.1162/016366003322387163. URL https://doi.org/10.1162/016366003322387163. Publisher: Routledge _eprint: https://doi.org/10.1162/016366003322387163. 1, 3, 4

L. Williams, A. Kemp, K. Felmingham, B. Liddell, D. Palmer, and R. Bryant. Neural biases to covert and overt signals of fear: Dissociation by trait anxiety and depression. *Journal of Cognitive Neuroscience*, 19:1595–1608, 2007. 9

Liu Yang, Mingyang Zhang, Cheng Li, Michael Bendersky, and Marc Najork. Beyond 512 Tokens: Siamese Multi-depth Transformer-based Hierarchical Encoder for Long-Form Document Matching. In *Proceedings of the 29th ACM International Conference on Information & Knowledge Management*, CIKM '20, pages 1725–1734, New York, NY, USA, October 2020. Association for Computing Machinery. ISBN 978-1-4503-6859-9. doi: 10.1145/3340531.3411908. URL http://doi.org/10.1145/3340531.3411908. 7, i

Aston Zhang, Zachary C. Lipton, Mu Li, and Alexander J. Smola. Dive into deep learning, 2021. 7, 65, 69, 71, 72, 73, 83

Yukun Zhu, Ryan Kiros, Richard Zemel, Ruslan Salakhutdinov, Raquel Urtasun, Antonio Torralba, and Sanja Fidler. Aligning books and movies: Towards story-like visual explanations by watching movies and reading books, 2015. 72

A

APPENDIX A

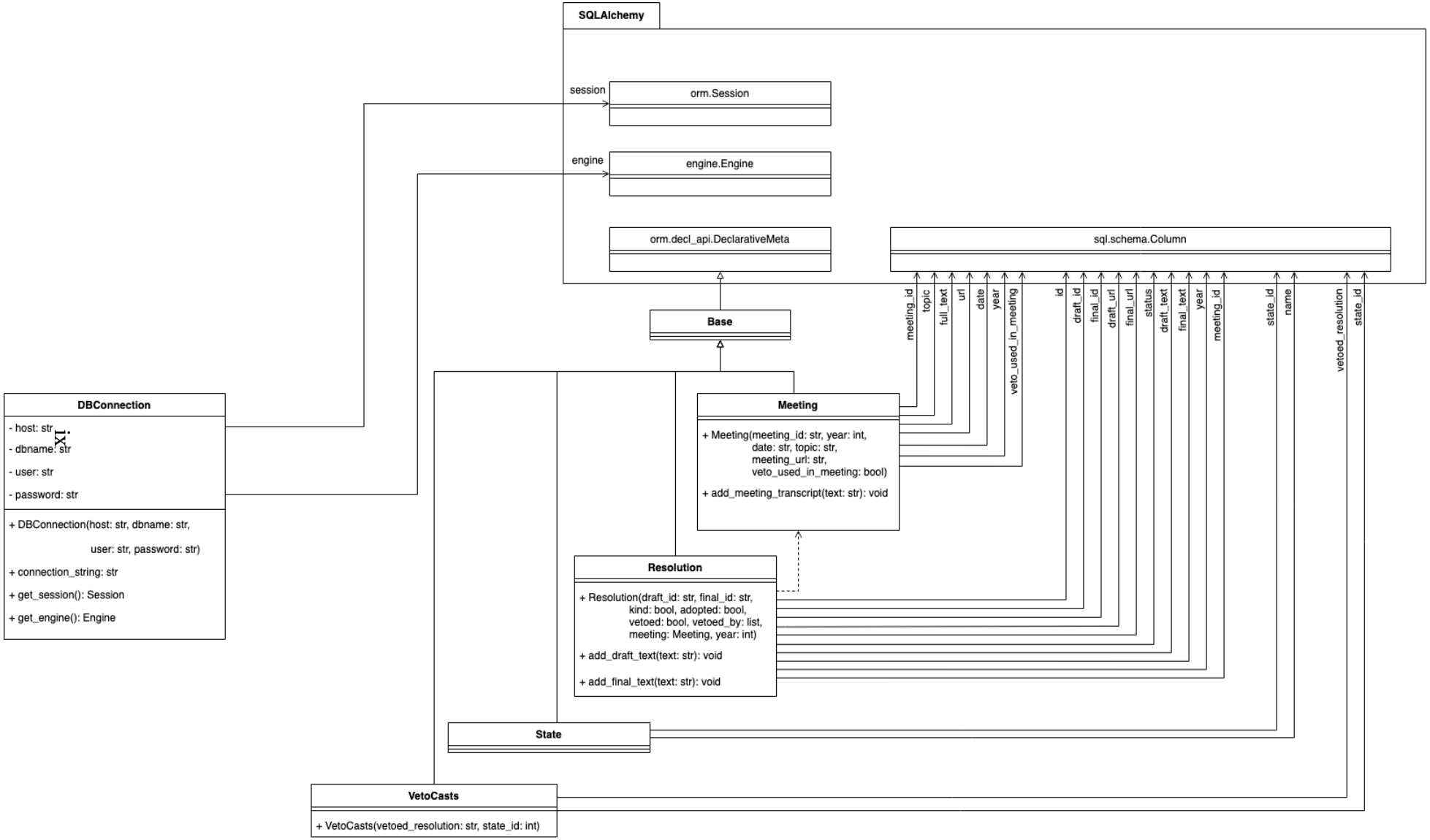

Figure A.1: The Class Diagram of our Dataset builder showing the inheritance coupling

B

APPENDIX B - INTERVIEW PROTOCOL

The interviews were done after approval from the Ethical Committee of the University (cETO).

B.1. OVERVIEW AS ENTERED IN THE CETO TOOL

Procedure Type: Fast Track (Research line for Master's thesis)
Intended start date: Sunday, February 7, 2021
Intended end date: Wednesday, December 1, 2021
Principal investigator (supervisor in case of thesis) : Stuurman S.
Researcher(s) performing the research (first name, surname, email): Cedric, Van Labeke, cedric.vanlabeke@gmail.com
Name and email address of student who is going to conduct the research (if applicable): Cedric, Van Labeke, cedric.vanlabeke@gmail.com
In what context will the research be performed?: master thesis
Does the WMO law apply?: no (no WMO check necessary)

1 Provide a brief description of the study (max 250 words) (research questions, study design, procedure and main variables) : We want to use software engineering and machine learning techniques to identify and control veto voting not in good faith, in the United Nations Security Council. Our research is technical, but once we have identified "malicious" vetos, we want to know from subject matter experts what the best consecutive actions are. We want to interview several people for that purpose.

2 a. What research population falls under the study? (You may check multiple answers): UN Representatives, Ambassadors, International Relations academics

2 b. Among which age category are you going to perform your research and which corresponding consent forms are you going to use?: > 17 years and compos mentis - Informed Consent, model 1

3 Subjects or their legal representative (for minors, those that are non compos mentis) provide written or online permission: yes

4 Are subjects or their legal representatives (for minors, those that are non compos mentis) informed in advance in written: yes

4a add information letter(s) – informed consent(s) (if more than one please upload all): See section B.2 and B.3 .

5 If it is not possible to provide full disclosure prior to the study taking place, are subjects / participants then : The objective of the study will be explained in detail during the interview to the interviewed candidates

7 Is personal data registered in this study? : No

7 a. Is it possible to trace back this personal data to an identifiable person? : –

7 b. Will the personal data in this study be treated in strict confidence and anonymously processed and stored?: –

8 If the personal data is not stored anonymously, is codification (encryption) used to store the data?: –

8 a. Who is responsible for the codification key (encryption key)?: –

B.2. Interview Invitation Email

We targeted two different groups. One were academics, another one linked in one form or another to the United Nations. Different templates were used for each targeted group. The emails were sent from a group mailbox accessible by the research team: *intrelengresearch@ou.nl.*

B.2.1. Acadmic SMEs

Dear ….. ,

I am a Software Engineering Master's student part of a new multi-disciplinary research

group that merges technology with international relations and conflict analysis studies. We have read your paper ..... about ..... with great interest.

Working on the final thesis, I want to apply Software Engineering and Artificial Intelligence techniques to the domain of your expertise: International Relations at the UN Security Council.

I would like to ask if I can have 45 minutes of your time for a short exploratory interview. I have a specific research question that would really benefit from your expertise.
In case you would accept to participate in this research, your identity and all answers can remain completely anonymous.

Looking forward to hearing from you.

Best regards,

Cedric Van Labeke
dr. ir. Clara Maathuis (supervisor)

Dear ..... ,

I am a Software Engineering Master's student part of a new multi-disciplinary research group that merges technology with international relations and conflict analysis studies.
Based on your profile and expertise we feel your insights and expertise will be very helpful to us.

Working on my final thesis, where I apply Software Engineering and Artificial Intelligence techniques to model the political decision-making processes of the UN Security Council.

I would like to ask if I can have 45 minutes of your time for a short exploratory interview. I have a specific research question that would really benefit from your expertise.
In case you would accept to participate in this research, your identity and all answers can remain completely anonymous.

Looking forward to hearing from you.

Best regards,

Cedric Van Labeke
dr. ir. Clara Maathuis (supervisor)

B.2.2. UN STAKEHOLDERS

Dear ..... ,

I have found your contact information on ..... and saw you are affiliated to the UN

Security Council in ....

I am a Software Engineering Master's student part of a new multi-disciplinary research group that merges technology with international relations and conflict analysis studies aiming at modeling political decision-making processes using software engineering and Artificial Intelligence techniques.

I would like to ask if I can have 45 minutes of your time for a short interview. I have a specific research question which would really benefit from your expertise.

If you would agree to help me out, your identity and answers will remain completely anonymous.

Looking forward to hearing from you.

Best regards,

Cedric Van Labeke
dr. ir. Clara Maathuis (supervisor)

B.3. Informed Consent

At the beginning of each session, we showed the interviewees a slide with the following information:

I give permission for the data that is collected during this study to be used for this scientific research.

I have had the opportunity to ask questions to the researcher if certain points were not clear.

I understand that all the information that I supply in relation to this study will be collected in a safe manner, will be published anonymously (if applicable) and therefor will not lead back to me.

I understand that I can pull out of the study at any time and I do not have to provide a reason for doing so.

The data is stored for a period of 10 years, in accordance with the VSNU guidelines

If you have read the above points and agree to participate in the study we can start now, if not, we end the interview here

When an interviewee would not agree, the interview stops there. All interviewed candidates proceeded with the interview.

B.4. QUESTIONS

The interview started reminding the interviewee with the role of the UN Security Council as per the UN Charter:

According to the UN Charter, the UN Members confer on the Security Council primary responsibility for the maintenance of international peace and security, and agree that in carrying out its duties under this responsibility the Security Council acts on their behalf.

Then we went over 6 questions one by one without further advancing into next questions. This to avoid inserting bias into the discussion when the final goal would be revealed in the last question.

1. Is the usage of the veto by the great powers consistent with the primary mission of the security council as defined by the UN charter?
2. What is the value of the veto vote to you and what do you feel are good reasons for a veto to be used?
3. Have you encountered situations where a veto was used illegitimately?
4. What is to you an indication that a veto was not used in a legitimate way?
5. What does biased voting mean to you, if anything?
6. Imagine an intelligent machine would attend a meeting..Do you think it is possible it could detect bias or illegitimate voting?
   (a) If yes, what would you require or expect from such a system? If illegitimate veto voting is detected, what do you think are appropriate consequential actions? What are good ways to limit and control the effect of it
   (b) If not, please elaborate.

At the end of the interview we explained in more detail how the interview helped answer our research questions, and the bigger project the thesis is.

C

APPENDIX C

United Nations S/2012/77

Security Council

Distr.: General
4 February 2012

Original: English

Bahrain, Colombia, Egypt, France, Germany, Jordan, Kuwait, Libya, Morocco, Oman, Portugal, Qatar, Saudi Arabia, Togo, Tunisia, Turkey, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland and United States of America: draft resolution

The Security Council,

Recalling its presidential statement of 3 August 2011,

Recalling General Assembly resolution A/RES/66/176 of 19 December 2011, as well as Human Rights Council resolutions S/16-1, S/17-1 and S/18-1,

Noting the League of Arab States' request in its decision of 22 January 2012,

Expressing grave concern at the deterioration of the situation in Syria, and profound concern at the death of thousands of people and *calling* for an immediate end to all violence,

Welcoming the League of Arab States' Action Plan of 2 November 2011 and its subsequent decisions, including its decision of 22 January 2012, which aims to achieve a peaceful resolution of the crisis,

Noting the deployment of the League of Arab States' observer mission, *commending* its efforts, *regretting* that, due to the escalation in violence, the observer mission was not in a position to monitor the full implementation of the League of Arab States' Action Plan of 2 November 2011, and *noting* the subsequent decision of the League of Arab states to suspend the mission,

Underscoring the importance of ensuring the voluntary return of refugees and internally displaced persons to their homes in safety and with dignity,

Mindful that stability in Syria is key to peace and stability in the region,

Noting the announced commitments by the Syrian authorities to reform, and *regretting* the lack of progress in implementation,

Reaffirming its strong commitment to the sovereignty, independence, unity and territorial integrity of Syria, *emphasizing* its intention to resolve the current political crisis in Syria peacefully, and *noting* that nothing in this resolution authorizes measures under Article 42 of the Charter,

Welcoming the engagement of the Secretary-General and all diplomatic efforts aimed at addressing the situation, and *noting* in this regard the offer of the Russian Federation to host a meeting in Moscow, in consultation with the League of Arab States,

1. *Condemns* the continued widespread and gross violations of human rights and fundamental freedoms by the Syrian authorities, such as the use of force against civilians, arbitrary executions, killing and persecution of protestors and members of the media, arbitrary detention, enforced disappearances, interference with access to medical treatment, torture, sexual violence, and ill-treatment, including against children;

2. *Demands* that the Syrian government immediately put an end to all human rights violations and attacks against those exercising their rights to freedom of expression, peaceful assembly and association, protect its population, fully comply with its obligations under applicable international law and fully implement Human Rights Council resolutions S-16/1, S-17/1, S-18/1 and General Assembly resolution A/RES/66/176;

3. *Condemns* all violence, irrespective of where it comes from, and in this regard *demands* that all parties in Syria, including armed groups, immediately stop all violence or reprisals, including attacks against State institutions, in accordance with the League of Arab States' initiative;

4. *Recalls* that all those responsible for human rights violations, including acts of violence, must be held accountable;

5. *Demands* that the Syrian government, in accordance with the Plan of Action of the League of Arab States of 2 November 2011 and its decision of 22 January 2012, without delay:

(a) cease all violence and protect its population;

(b) release all persons detained arbitrarily due to the recent incidents;

(c) withdraw all Syrian military and armed forces from cities and towns, and return them to their original home barracks;

(d) guarantee the freedom of peaceful demonstrations;

(e) allow full and unhindered access and movement for all relevant League of Arab States' institutions and Arab and international media in all parts of Syria to determine the truth about the situation on the ground and monitor the incidents taking place; and

(f) allow full and unhindered access to the League of Arab States' observer mission;

6. *Calls* for an inclusive Syrian-led political process conducted in an environment free from violence, fear, intimidation and extremism, and aimed at effectively addressing the legitimate aspirations and concerns of Syria's people, without prejudging the outcome;

7. *Fully supports* in this regard the League of Arab States' 22 January 2012 decision to facilitate a Syrian-led political transition to a democratic, plural political system, in which citizens are equal regardless of their affiliations or ethnicities or beliefs, including through commencing a serious political dialogue between the

Syrian government and the whole spectrum of the Syrian opposition under the League of Arab States' auspices, in accordance with the timetable set out by the League of Arab States;

8. *Encourages* the League of Arab States to continue its efforts in cooperation with all Syrian stakeholders;

9. *Calls upon* the Syrian authorities, in the event of a resumption of the observer mission, to cooperate fully with the League of Arab States' observer mission, in accordance with the League of Arabs States' Protocol of 19 December 2011, including through granting full and unhindered access and freedom of movement to the observers, facilitating the entry of technical equipment necessary for the mission, guaranteeing the mission's right to interview, freely or in private, any individual and guaranteeing also not to punish, harass, or retaliate against, any person who has cooperated with the mission;

10. *Stresses* the need for all to provide all necessary assistance to the mission in accordance with the League of Arab States' Protocol of 19 December 2011 and its decision of 22 January 2012;

11. *Demands* that the Syrian authorities cooperate fully with the Office of the High Commissioner for Human Rights and with the Commission of Inquiry dispatched by the Human Rights Council, including by granting it full and unimpeded access to the country;

12. *Calls upon* the Syrian authorities to allow safe and unhindered access for humanitarian assistance in order to ensure the delivery of humanitarian aid to persons in need of assistance;

13. *Welcomes* the Secretary-General's efforts to provide support to the League of Arab States, including its observer mission, in promoting a peaceful solution to the Syrian crisis;

14. *Requests* the Secretary-General to report on the implementation of this resolution, in consultation with the League of Arab States, within 21 days after its adoption and to report every 30 days thereafter;

15. *Decides* to review implementation of this resolution within 21 days and, in the event of non-compliance, to consider further measures;

16. *Decides* to remain actively seized of the matter.

D

APPENDIX D

United Nations S/PV.6711

Security Council

Sixty-seventh year

Provisional

6711th meeting

Saturday, 4 February 2012, 10 a.m.

New York

President:	Mr. Menan	(Togo)
Members:	Azerbaijan	Mr. Musayev
	China	Mr. Li Baodong
	Colombia	Mr. Osorio
	France	Mr. Araud
	Germany	Mr. Wittig
	Guatemala	Mr. Rosenthal
	India	Mr. Hardeep Singh Puri
	Morocco	Mr. Loulichki
	Pakistan	Mr. Haroon
	Portugal	Mr. Moraes Cabral
	Russian Federation	Mr. Churkin
	South Africa	Mr. Sangqu
	United Kingdom of Great Britain and Northern Ireland	Sir Mark Lyall Grant
	United States of America	Ms. Rice

Agenda

The situation in the Middle East

12-22356 (E)

The meeting was called to order at 11.50 a.m.

Expression of thanks to the outgoing President

The President (*spoke in French*): As this is the first meeting of the Council for the month of February 2012, I should like to take this opportunity to pay tribute, on behalf of the Council, to His Excellency Mr. Baso Sangqu, Permanent Representative of South Africa, for his service as President of the Security Council for the month of January 2012. I am sure I speak for all members of the Council in expressing deep appreciation to Ambassador Sangqu and his delegation for the great diplomatic skill with which they conducted the Council's business last month.

Adoption of the agenda

The agenda was adopted.

The situation in the Middle East

The President (*spoke in French*): Under rule 37 of the Council's provisional rules of procedure, I invite the representatives of Bahrain, Egypt, Jordan, Kuwait, Libya, Oman, Qatar, Saudi Arabia, Tunisia, Turkey, the United Arab Emirates and the Syrian Arab Republic to participate in this meeting.

It is so decided.

The Security Council will now begin its consideration of the item on its agenda.

Members of the Council have before them document S/2012/77, which contains the text of a draft resolution submitted by Bahrain, Colombia, Egypt, France, Germany, Jordan, Kuwait, Libya, Morocco, Oman, Portugal, Qatar, Saudi Arabia, Togo, Tunisia, Turkey, the United Arab Emirates, the United Kingdom of Great Britain and Northern Ireland and the United States of America.

It is my understanding that the Council is ready to proceed to the vote on the draft resolution before it. I shall put the draft resolution to the vote now.

A vote was taken by a show of hands.

In favour:

Azerbaijan, Colombia, France, Germany, Guatemala, India, Morocco, Pakistan, Portugal, South Africa, Togo, United Kingdom of Great Britain and Northern Ireland, United States of America

Against:

China, Russian Federation

The President (*spoke in French*): There were 13 votes in favour and two against. The draft resolution has not been adopted, owing to the negative vote of two permanent members of the Council.

I shall now give the floor to those members of the Council who wish to make statements following the voting.

Mr. Loulichki (Morocco) (*spoke in Arabic*): At the outset, Sir, allow me to offer Morocco's congratulations to you on your assumption of the presidency of the Council for the month. Similarly, our great appreciation goes to Ambassador Baso Sangqu and his delegation for their presidency of the Council last month.

I wish to express my delegation's great regret and disappointment over the Council's failure to adopt the draft resolution (S/2012/77) we submitted three days ago, as well as our sincere hope that the Council's failure will not serve as a pretext for further dangerous backsliding in the humanitarian situation in brotherly Syria and increased innocent civilian casualties.

It should be recalled that in their recent presentations to the Council (see S/PV.6710), Sheikh Hamad bin Jassim bin Jabr Al-Thani, Chairman of the current session of the Ministerial Council of the League of Arab States, and Mr. Nabil Elaraby, Secretary-General of the League of Arab States, made a clear and urgent request for the Council's support of the regional organization's bold, decisive and comprehensive initiative based on dialogue, mutual understanding and national reconciliation, aimed at achieving a peaceful solution for a situation that has only continued to worsen with time.

In assuming its responsibility as the Arab member of the Security Council and in close cooperation with other States members and non-members of the Council, in particular many of the Arab countries, Morocco, almost a year after the start of the crisis in brotherly Syria, continues to work to achieve consensus in order to enable the Council to speak with a single voice.

Morocco highly appreciates the initiative of all the Council members that joined us in sponsoring the draft resolution. I refer to the Council's unanimous response to the proposals made by one of its members. We duly appreciate the spirit of consensus and

flexibility reflected in the draft resolution, of which members are well aware.

Through our efforts, we have endeavoured to live up to the firm principles demanding an immediate and complete end to all hostilities and acts of violence, and to encourage political dialogue in order to enable the Syrian people to establish its national political institutions, preserve Syria's territorial integrity and social, pluralistic unity and, equally important, to forestall any external military intervention. Now that the Council has failed to reach a decision to support the Arab initiative, the road map remains the only tool as an exemplary framework for implementation by the League of Arab States.

We are terribly pained by the horrendous events unfolding before us. We ask God to bless all the victims without exception, and we call for the bloodshed to end and for all factions of the Syrian people to establish a democratic State and open a single, unified society enjoying understanding and harmony. We hope that the Security Council will not have to address the situation yet again, although it seems to be deteriorating. We hope that now that the Council has been unable to reach decision, all those who have leverage with the parties will spare no effort to ensure that no further innocent victims are claimed and that the violence and counter-violence will come to an end.

Mr. Araud (France) (*spoke in French*): It is with great sadness and concern that I note the exercise today of a double veto against a draft resolution on Syria that had been supported by all other members of the Council. This is a sad day for the Council; it is a sad day for the Syrians; and it is sad day for all the friends of democracy.

Above and beyond the thousands of dead, wounded, tortured and imprisoned since the repression began almost a year ago, history has compounded our shame because today is the anniversary of the Hama massacre and falls only one day after another massacre in Homs. The father killed on a mass scale; the son has followed in his footsteps. Horror would seem to be hereditary in Damascus.

We have been discussing Syria for 10 months, and all we have managed to adopt is a mere presidential statement on 3 August 2011 (S/PRST/2011/16) because of the exercise of the veto, exercised in October by the same members, of a text that was as moderate as today's.

What has happened over these past 10 months? More than 6,000 Syrians have fallen victim to repression, and the situation could well be worse than we know. Ten days ago, United Nations High Commissioner for Human Rights Pillay told us that she was no longer able to count the victims of repression. The Secretary-General has called tirelessly on the Council to act to stop the crimes against humanity being committed in Syria. And the Council has remained silent.

The Human Rights Council has thrice noted the overwhelming responsibility of the Syrian regime, and the Security Council has remained silent.

Some 133 members of the General Assembly have solemnly condemned these criminal acts and called for an immediate end to them. And the Council has remained silent.

Only three days ago in this very Chamber (see S/PV.6710), the League of Arab States called on the Council to support its action in the face of the Syrian regime's refusal to listen and the implications of that refusal for the entire region. The Secretary-General of the Arab League and the Prime Minister of Qatar called here for a solution that is the only credible road to a peaceful settlement of the Syrian crisis. A draft resolution that was submitted by Morocco, broadly co-sponsored within and outside the Council, and deemed by most to be consensual, offered the Council's support for regional efforts — nothing more, nothing less — and yet the Council will remain silent.

We cannot and must not overlook the harrowing conclusion that two permanent members of the Council have systematically obstructed all its action. They do so in the full knowledge of the tragic consequences of their decisions for the Syrian people. And in so doing, they are making themselves complicit in the policy of repression being implemented by the Damascus regime. Whatever they may claim, they have de facto taken the side of the Al-Assad regime against the Syrian people.

I know the arguments that will be made by those who today opposed the Council's action. I have already heard them say that only a few more days would have sufficed for us to reach an agreement. How can one speak of a few more days when hundreds of Syrians

are dying every day? We could wait no longer, especially as the draft resolution represents the broadest possible consensus of the international community in support of the efforts of regional actors to find a peaceful solution to the crisis.

For the past 10 months, we have been accused of seeking regime change and preparing for military intervention. That is patently false. We have fully answered those concerns. In this Chamber three days ago, our Ministers confirmed that there was no question of imposing a political regime on Syria. On that point and on the issue of armed intervention, the draft resolution was crystal clear. How much time have we squandered responding to these debating points? The procrastination, scheming and hesitancy are not commensurate with the tragedy being experienced by the Syrian people.

History will judge harshly those countries that have prevented the Council from offering its support to the courageous efforts of the Arab League to implement its plan. In so doing, they have without scruple aligned themselves with a regime slaughters its own people. In so doing, they have judged that their presence in the Middle East now depends on the future of the Al-Assad. That presence and that regime will endure the same fate.

As I said, today is sad day. But we will not stop here. We have no right to abandon the Syrian people to its tragic fate. I tell the Syrians that France will continue to work in all forums and with all partners that share its values towards the objective that should have united us here today — an end to the Syrian nightmare. We will continue to work with the Arab League, whose plan remains on the table even though it has not been endorsed by the Council. We will continue to support the peaceful Syrian opposition that is rallying around the Syrian National Council. We will continue to up the pressure by imposing further sanctions of the European Union.

I save my final word for the Syrian people, who with untold courage have kept their eyes on the prize of future freedom for the past 10 months. From this Chamber, I offer them France's full support and resolve relentlessly to pursue our action. We weathered a first double veto and returned to the Council; today, we have weathered a second on the part of the same countries. However, for the sake of the principles that guide the Council and the work of the United Nations, and for the sake of our responsibility as a permanent members, that will not stop us.

Mr. Wittig (Germany): Germany and the overwhelming majority of Council members supported the draft resolution that was submitted by Morocco on behalf of the Arab States. However, two permanent members of the Council chose to exercise their veto. That is to say that, after more than 11 months of brutal violence and repression by the Syrian Government; after more than 5,500 deaths; after the killing of almost 400 children; and after far too many peaceful protesters have been detained, tortured, raped and abused, today the Security Council again failed to assume its responsibilities and to live up to its mandate to maintain international peace and security.

In short, the people of Syria and the region have been let down again, and that is a crying shame — even more so in the light of the recent massacres in Homs; even more so in the light of one the bloodiest days of the Arab Spring; and even more so on the tragic thirtieth anniversary of the Hama massacre. And that is the real scandal.

Germany's position is very clear. The Council should urge Al-Assad to stop the killing. His regime has to put an immediate end to the violence. It has to stop the massive, gross and systematic violation of human rights. That was the first major element of the draft resolution before us (S/2012/77).

Many of the demands expressed in the draft resolution were actually accepted by the Syrian Government on 19 December 2011. The Syrian Government agreed to the cessation of violence, to the release of all political prisoners, to the withdrawal of its armed forces, and to the unhindered freedom of movement of observers and journalists. According to the League of Arab States, however, none of those commitments was fully met by the Syrian Government.

Last Tuesday, this Council heard a remarkable plea by the League of Arab States (see S/PV.6710). The Arab States urged the Council not to let the Syrian people down; they urged the members of the Council to support them in resolving the crisis in Syria. That was the second major element of our draft resolution — to answer the call from Arab States and large parts of the international community to fully support the initiative of the League of Arab States, which is aimed at finding a political, Syrian-led solution to the crisis. That was the call of the draft resolution.

The draft resolution did not foresee an arms embargo or a sanctions regime, as we had wished for; nor did it mandate a commission of inquiry into human rights violations, as we had advocated. We regret that it did not, but we negotiated in a spirit of compromise, and we were ready to make substantial concessions. The draft also did not call for regime change, as some maintained. What it did, however, was to support a political framework set out by the League of Arab States. That framework is intended to facilitate a Syrian-led political transition to a democratic and plural political system, because that is what it is all about — to have the Syrian people itself decide on its own political future. That is the way for peace and security to best be achieved, in Syria and beyond. And that is what the majority here in the Council agrees upon. We regret that two Council members disagreed.

The violence in Syria has to stop. A political dialogue has to begin under the auspices of the League of Arab States. There is a political way out of this crisis. We are afraid, however, that today's decision will spur further violence and make it harder to reach a political solution. Nevertheless, Germany will continue to work with all partners in the region to support the League of Arab States.

As much as we regret today's decision, let me reassure members of the Council that Germany remains ready to work with all of them to overcome our division and to bridge the gaps. We owe that not only to the Syrian people, but also to the mandate of this Council, which is the maintenance of peace and security.

Ms. Rice (United States of America): The United States is disgusted that a couple of members of this Council continue to prevent us from fulfilling our sole purpose here, which is to address an ever-deepening crisis in Syria and a growing threat to regional peace and security. For months, this Council has been held hostage by a couple of members. Those members stand behind empty arguments and individual interests, while delaying and seeking to strip bare any text that would pressure Al-Assad to change his actions. That intransigence is even more shameful when we consider that at least one of those members continues to deliver weapons to Al-Assad.

The United States has long said that it is past time for the Council to assume its responsibilities and to impose tough, targeted sanctions and an arms embargo on the Al-Assad regime, as many individual countries have already done. But today's draft resolution (S/2012/77) did not even do that. The text simply supported an Arab League plan that Al-Assad himself already agreed to uphold and the subsequent Arab League decision towards a peaceful resolution of the crisis. The sponsors of the draft resolution truly went the last mile to try to reach consensus on a draft that already more than accommodates the concerns of a few Council members about the use of force and sanctions. Subsequent attempts today to introduce wrecking amendments at the eleventh hour, only to further delay Council action, are unforgivable.

Since yesterday, the Syrian Government has waged and intensified an especially horrific campaign in Homs to murder hundreds, including women and children, with artillery, tanks and other indiscriminate violence. Syrian forces continue to prevent hundreds of innocent and injured civilians from seeking medical help. The international community must protect the Syrian people from that abhorrent brutality. But a couple of members of this Council remain steadfast in their willingness to sell out the Syrian people and to shield a craven tyrant.

The United States, by contrast, stands fully and irrevocably with the long-suffering people of Syria.

Since those same two Council members vetoed the last draft resolution on Syria, we have heard reports from the High Commissioner for Human Rights that the regime may be committing crimes against humanity. We also heard from Arab League Secretary-General Elaraby and from Qatari Prime Minister Hamad bin Jassim bin Jabr Al-Thani, who noted that the Assad regime has "failed to make any serious effort to cooperate" (*see S/PV.6710, p.4*) with the Arab League and that Assad's "killing machine continues effectively unabated" (*ibid., p.5*).

Since those two members last vetoed a draft resolution on Syria, an estimated 3,000 more civilians have been killed, with another almost 250 killed just yesterday. Many thousands more have been held captive and tortured by Al-Assad and his Shabia gangs. Since those two members last vetoed a resolution, however, and despite the absence of Security Council action, we have seen more and more Syrians speak out in peaceful demonstrations against the regime.

Once again, the courageous people of Syria can clearly see who on this Council supports their yearning

for liberty and universal rights and who does not. And during this season of change, the people of the Middle East can now see clearly which nations have chosen to ignore their calls for democracy and instead to prop up desperate dictators. Those who oppose the draft resolution have denied this last chance to end Al-Assad's brutality through peaceful means under Arab League auspices. Any further bloodshed will be on their hands.

The Governments that once again stymied Council action today need to reverse course and to heed the voices of the Syrian people — for their own sake, for the sake of Syria, for the sake of the Middle East, and for the sake of this Council.

Mr. Moraes Cabral (Portugal): This is indeed a sad day for the Security Council. Once again, it was unable to act to send a forceful and united message to the Syrian authorities to stop killing and torturing their people, even though in the recent hours hundreds more have been killed.

How long will this Council allow the Syrian killing machine to continue to push the country into a bloody sectarian conflict? How many more dead and maimed will it take to finally force this Council into action? It is indeed regrettable and particularly worrying that the Security Council was unable to unanimously support the decision of the League of Arab States of 22 January to facilitate a political transition to a democratic, pluralistic political system in which all Syrians are equal, regardless of their affiliations or ethnicity or beliefs, and are de facto citizens of their country.

A Syrian-led political transition based on a serious political dialogue between the Syrian Government and the whole spectrum of the Syrian opposition: that is exactly what those who did not support this resolution today had been demanding.

The Security Council was unable to respond to the plea of the League of Arab States that it support the Arab world's attempt to end the killing and reach a peaceful political solution to the Syrian crisis — two goals that are, I believe, shared by all on this Council. Yet again the Council has failed to meet its responsibilities towards the Syrian people and to fulfil its role as the primary body entrusted with the maintenance of international peace and security. Not only is this extremely disappointing; it is simply unacceptable.

As was made perfectly clear in this Council last Tuesday, the situation in Syria is untenable and is rapidly spiraling towards civil war. Clear and unanimous support by this Council for the efforts of the Arab League is essential if we are to counter such a dangerous development. It was made abundantly clear in this Chamber that this draft resolution was not about regime change, nor did it seek to impose changes on Syria from outside, much less to allow for the use of force or impose sanctions. The sole objective of this resolution was to put an immediate end to the violence and enable a Syrian-owned political dialogue that would allow the Syrian people to determine their own future peacefully.

As my minister stated here earlier this week (see S/PV.6710), we fully support the efforts of the League of Arab States regarding Syria, including its decision of 22 January 2012 and the political road map therein. They represent the only viable way to solve this crisis peacefully, through political means.

Portugal remains fully committed to the sovereignty, independence, territorial integrity and national unity of Syria. We urge all parties in Syria to immediately halt all violence and engage in a serious political dialogue under the auspices of the League of Arab States. Portugal will continue to work actively with the Arab League towards the fulfilment of these objectives.

Sir Mark Lyall Grant (United Kingdom): The United Kingdom is appalled by the decision of Russia and China to veto an otherwise consensus resolution, submitted by Morocco, the United Kingdom, the United States, France, Germany, Portugal, Colombia, Togo, Libya, Bahrain, Jordan, Kuwait, Qatar, Saudi Arabia, the United Arab Emirates, Egypt, Tunisia, Oman and Turkey.

It has been 10 months since the Syrian people bravely demanded their universal rights, and 10 months since the Syrian regime responded by violently repressing and killing its own people.

Six months ago the Council adopted a presidential statement (S/PRST/2011/16) condemning the widespread violations of human rights and the use of force against civilians by the Syrian authorities. It called for an immediate end to violence and compliance with obligations under international law, and for the Syrian Government to implement its stated commitments to reform. On that day, the death toll in

Syria stood at approximately one thousand. But the Syrian regime only continued its brutal repression.

Four months ago, two Council members vetoed an attempt to send a clear message to the Syrian regime to end the bloodshed. That day, the death toll stood at three thousand, and the Syrian regime only continued its brutal repression.

The death toll today stands at around six thousand. The Syrian regime has ferociously escalated its already brutal repression in the last 24 hours, subjecting the citizens of Homs to artillery and heavy weaponry. The death toll will be high. Those who blocked Council action today must ask themselves how many more deaths they are prepared to tolerate before they support even modest and measured action.

Last Tuesday, this Council and the world heard from His Excellency Sheikh Hamad bin Jassim bin Jabr Al-Thani of Qatar and from the Secretary-General of the League of Arab States (see S/PV.6710). They came with a simple request for Security Council support for the Arab League's plan to facilitate a political transition and bring about a peaceful resolution to the crisis. The original Moroccan draft resolution did just that. From the outset it had support from the vast majority of Council members and had the backing of the Arab League.

Yet some Council members argued that the draft resolution imposed regime change. It said no such thing. But in an attempt to reach consensus, we provided further assurances in the text. The same minority argued that the text could somehow be used to authorize military intervention. It did no such thing. It was a Chapter VI resolution. But in an attempt to reach consensus, we provided further assurances in the text. The same minority argued that very modest language expressing concern about weapons was somehow tantamount to an arms embargo. It was not. But we took it out. They said that mere mention of Arab League sanctions was tantamount to United Nations sanctions. It was not. But we took it out in an effort to reach consensus.

The facts speak for themselves. There is nothing in this text that should have triggered a veto. We removed every possible excuse. The reality is that Russia and China have today made a choice to turn their backs on the Arab world and the support tyranny rather than the legitimate aspirations of the Syrian people. They have failed in their responsibility as permanent members of the Security Council, and they have done so on the most shameful of days of the Syrian killing machine's three hundred days of oppression.

The United Kingdom will continue to support the Arab League's efforts to bring about a peaceful transition in Syria. We shall continue to support the brave Syrian people in their demands for change. The regime must cease the violence. There must now be a transition to a new political dispensation. Should the regime continue on its current bloody trajectory, we will once again bring the issue back to this Council, in consultation with our colleagues in the Arab League.

Mr. Osorio (Colombia) (*spoke in Spanish*): On behalf of Colombia, I wish to state my disappointment and regret at the outcome of the vote, which denies the member countries of the League of Arab States, and this Organization itself, the support that has been requested of us for a plan intended to bring an end to the tragedy being experienced in Syria and to defend the lives and rights of the people of that country.

Since the beginning of the violent repression by the Syrian Government of the civilian population more than ten months ago, we have made many attempts, many appeals to find a solution to the crisis. The response has been a continuous escalation of the brutal use of force and the violation of all the human rights of the people of that country.

Throughout this process we have engaged in ongoing dialogue with the Arab countries. We always took into account their guidance and requests to permit and facilitate Arab League action before the Council took a decision. This was done until their efforts were no longer responded to, and they specifically requested, last week, that this Council support their political transition plan in order to achieve peace and establish a democratic regime in Syria.

Colombia supported and voted in favour of the draft resolution submitted by Morocco in response to the request formally presented to the Council by the Secretary-General of the League of Arab States (see S/PV.6710), convinced that the Syrian people must be rescued from the terrible tragedy that they are suffering today.

Mr. Rosenthal (Guatemala) (*spoke in Spanish*): Our position on the situation in Syria was fully

explained by our Minister for Foreign Affairs last Tuesday in the Chamber (see S/PV.6710).

Our prime objective is to help to put an end to the spiral of violence afflicting the Syrian population and to find a political solution to the crisis experienced by that country. We believe that the League of Arab States has adopted an initiative that meets both goals (see S/2012/71, annex). We therefore voted in favour of the draft resolution just put before us (S/2012/77).

We regret that our vote was in vain owing to the very particular voting system that governs our decision-making process. That adds to the ranks of those affected by this matter — not only the victims of the violence, whom, I underscore, are our prime concern, but also the effectiveness of the Security Council in adequately responding to the challenges facing it.

In conclusion, our delegation deeply regrets that we have failed to meet the request made of us by the League of Arab States. We urge its member countries to persevere in its initiatives, including that of 22 January.

Mr. Hardeep Singh Puri (India): I want to start by congratulating you, Sir, on assuming the presidency of the Security Council for the month of February. My delegation and I look forward to working with you to make your presidency truly successful. In an earlier incarnation, I had the opportunity to have visited your beautiful country. I would also like to take this opportunity to complement South Africa, Ambassador Baso Sangqu and his team for their wise and able stewardship of the Council in January.

The Syrian Arab Republic has historically played an important role in the Middle East. Prolonged instability and unrest in Syria have implications for peace and stability in the wider region. India is concerned about the present situation in Syria, which has resulted in the deaths of thousands of civilians and security forces personnel over the past 10 months. Therefore, since the beginning of the protest, we have called for a peaceful and inclusive political process to address the grievances of all sections of Syrian society.

We strongly condemn all violence, irrespective of the perpetrators. We also condemn all violations of human rights. India holds the rights of expression and peaceful assembly among the fundamental values that should be respected, while ensuring the stability and security of society. India has conveyed that message to the Syrian leadership, both bilaterally and with our partners Brazil and South Africa. We have impressed upon the Syrian side to abjure violence and pay heed to the aspirations of the people of Syria. That message was also contained in the presidential statement issued by the Council in August 2011 under India's presidency (S/PRST/2011/16).

We are firmly of the view that a political process for the resolution of the present crisis should be led by the Syrians themselves. We believe that the main role of the international community, including the Council, is to facilitate engagement of the Syrian people with all sections of Syrian society for an inclusive political process that takes into account the legitimate aspirations of all Syrians, while ensuring respect for the country's sovereignty, unity and territorial integrity.

We note that the draft resolution enjoins the Government to protect its population, indicating that it should have the capacity to do so. The League of Arab States is an important regional organization and should play its required and historic role in promoting political dialogue among the Syrian parties.

In that context, we welcome the deployment of the League's observer mission across several areas of the country, which had a calming effect on the level of violence and provided a more accurate picture of developments. We hope that the mission can return soon.

Our support for today's draft resolution is in accordance with our support for the efforts of the Arab League for a peaceful resolution of the crisis through a Syrian-led inclusive political process. We note that the draft resolution expressly rules out any measures under Article 42 of the Charter and calls for a serious political dialogue between the Syrian Government and the whole spectrum of the opposition under the auspices of the League of Arab States.

We believe that the leadership of Syria is a matter for the Syrian people to decide. It would be necessary for all opposition forces in Syria to peacefully engage in constructive dialogue with the authorities. We hope that that would create a new environment for peace and facilitate a political process. That political dialogue should build upon the political reforms already announced by the Syrian leadership, with the necessary changes for them to find acceptance among all sections of Syrian society.

Mr. Churkin (Russian Federation) (*spoke in Russian*): The bloodshed and violence in Syria must be immediately ended. To that end, the Russian Federation has undertaken active diplomatic efforts in contacts with the Syrians, Syria's Arab neighbours and other members of the international community. Today, it was announced in Moscow that, on instructions from President Medvedev of the Russian Federation, Minister for Foreign Affairs of the Russian Federation Lavrov and the Director of the Foreign Intelligence Service of the Russian Federation, Mr. Fradkov, are to visit Damascus on 7 February for a meeting with President Al-Assad of the Syrian Arab Republic.

In the Security Council, we have actively tried to reach a decision for an objective solution that would truly help to put a prompt end to violence and start a political process in Syria. The decision of the Security Council should be just that, but from the very beginning of the Syrian crisis some influential members of the international community, including some sitting at this table, have undermined any possibility of a political settlement, calling for regime change, encouraging the opposition towards power, indulging in provocation and nurturing the armed struggle.

The work of the Security Council was not taken to its conclusion. The draft resolution put to the vote (S/2012/77) did not adequately reflect the true state of affairs in Syria and sent a biased signal to the Syrian sides. The sponsors of the draft resolution did not take into account our proposed amendments to the draft resolution to the effect that the Syrian opposition must distance itself from extremist groups that are committing acts of violence, and calling on States and all those with any relevant opportunity to use their influence to stop those groups committing acts of violence. Nor has account been taken of our proposals that along with the withdrawal of the Syrian armed forces from the cities, there should be an end to attacks by armed groups on State institutions and neighbourhoods. Nor has there been support for the proposal to show more flexibility for the intermediary efforts of the League of Arab States, which would increase the chances for the success of an inclusive Syrian political process.

Under these conditions, the Russian delegation voted against the draft resolution submitted. We greatly regret such an outcome of our joint work in the Security Council. We believe that intensive efforts by the international community will be continued, with a view to an immediate end to the violence and a successful beginning and conclusion of an inclusive Syrian political process and to withdrawal of that country from a profound crisis.

Russia, for its part, will continue to work precisely in that direction.

Mr. Li Baodong (China)(spoke in Chinese): The Security Council has just voted on the draft resolution on Syria (S/2012/77), and China voted against it.

China has, all along, followed closely the developments in Syria. We call on all parties in Syria to stop the violence and in particular to avoid casualties among innocent civilians, to restore order in the country as soon as possible and to respect the request of the Syrian people for reform and for the safeguarding of their own interests. This is in the fundamental interest of Syria and its people. We support the good-offices efforts of the Arab League to resolve the Syrian crisis so as to promote an early launch of an inclusive political process led by the Syrian people and in which all parties extensively participate, to peacefully resolve differences and disputes through dialogue and negotiations, and to restore stability in Syria.

The international community should provide constructive assistance to help achieve these goals. At the same time, the sovereignty, independence and territorial integrity of Syria should be fully respected. The actions of the Security Council on the Syrian issue should comply with the purposes and principles of the Charter of the United Nations and help ease the tensions, help promote political dialogue and diffuse disputes, and help maintain peace and stability in the Middle East region, rather than complicate the issue.

Under these principles, China participated actively in the consultations on the draft resolution and supported the efforts of the Arab League to facilitate a political settlement of the Syrian issue and to maintain stability in the region. Like many Council members, China maintains that under the current circumstances, to put undue emphasis on pressuring the Syrian Government for a prejudged result of the dialogue or to impose any solution will not help resolve the Syrian issue. Instead, that may further complicate the situation.

China supports the amendments proposed by the Russian Federation and has noted that the Russian Foreign Minister will visit Syria next week. The request by some Council members for continued consultations on the draft resolution is reasonable. It is regrettable that these reasonable concerns were not taken into account. To put through a vote when parties are still seriously divided over the issue does not help maintain the unity and authority of the Security Council nor help to properly resolve the issue. In this context, China voted against the draft resolution.

Syria is an important country in the Middle East. Peace and stability in Syria serve the common interests of the Syrian people and the international community. China will continue to work with the international community and to play a positive and constructive role in the proper settlement of the Syrian issue.

Mr. Haroon (Pakistan): Many congratulations, Mr. President, on assuming the post of Council President, and with such an important world issue at the very start of your tenure.

The problem in Syria has assumed dimensions that are not only regrettable but condemnable. We have to understand that while we have made civilization, we have also condoned expressions like "collateral damage", and so many others, which it is not my intention to name here today. But I believe that we accept too much too easily. It reminds me of when, two thousand years ago, Pontius Pilate washed his hands and said, "I have nothing to do with this." Two thousand years later, we still see that humanity suffers from that particular viewpoint.

Pakistan had some serious concerns, mainly against killings, the massacre of innocents. But also, on a point of principle of the Charter, we were not happy about any infringement on the sovereignty or integrity of Syria.

There was a very spirited attempt, as related by Sir Mark just now as well, to take care of issues and concerns, and we are thankful for that. I believe that it became important to be able to end killings by asking both sides — in fact, forcing both sides — to acknowledge that it is unacceptable, and based on the strong moral point that the Arab League draft introduced into this.

There was a question of amnesty. I also believe it was an accepted fact that everyone has to get involved to stop it. Do not forget that nothing succeeds anywhere in the world against a government without external help. That is a point of history that cannot be ignored.

It is easy for those of us who today voted in the majority to sit back and say, "Well, we have done our bit." No, we have not. We cannot wash our hands of this. We must continue and seek — as the Russians and the Chinese have stated that they will continue to seek — the way forward. I believe that the best vehicle is the Arab League plan and the very substantial moves that have been accepted over the last few days.

I believe that the offer of no regime change, of plurality, and the promotion of democracy are important aspects of this situation. We have stood by that. I believe that even today our system has indeed let us down. We have been very clear, without taking political benefit out of it, that this aspect of the veto is always a heart-wrencher. It cuts both ways, benefitting one side at one moment and the other at another moment. Either everyone should have the veto, and then see how the world gets on, or perhaps we should all consider not using it whatsoever.

I also think we have arrived at a situation that demands we persevere in our efforts to strengthen the relationships among us. Today our decision mattered a great deal to our Arab brethren, who have been so important to us. We had to stand with them on principle because they wanted our support pretty unanimously. I raised a question a couple of days earlier, noting that I did not then see present either Tunisia, Egypt or others that are such strong proponents on this issue; and I am glad to see their presence today. That is a great plus, in my mind.

I would like to close with a few words of reminder that all this was done with good intentions on all sides. I am not going to beat anyone with a stick. I believe consensus was achieved, though there were some drop-outs from it, and I believe we can still work towards that consensus. There is a visit to Syria scheduled in the next few days. I am sure that some more points may arise.

This matter should not be allowed to die. The draft resolution should remain an active matter before this Council, and we should address it again as soon as possible, with the help even of those that decided today not to vote for it. By keeping the matter active, we would give hope to those who are expecting action

from us. Having made these few remarks, I urge the Council to keep its engagement on this matter alive.

Mr. Sangqu (South Africa): Let me start by congratulating you, Sir, and Togo on your assumption of the Council presidency for the month of February. Please be assured of South Africa's full support.

The world is watching with great concern as the crisis in Syria unfolds and degenerates by the day, claiming civilian lives and injuring and displacing many people, including children. As we have said before, we remain deeply concerned about the deteriorating political, security, socio-economic and humanitarian situation in Syria. It continues to deteriorate despite calls from the international community on the Syrian Government and the armed opposition to stop the violence and settle their differences in a peaceful manner. We condemn the violent loss of life in Syria and call for maximum of restraint from all parties to the conflict. We urge the parties to stop the violence immediately and commit themselves to finding a peaceful, political solution through a Syrian-led and owned, transparent and all-inclusive political process that will fulfil the legitimate aspirations of the Syrian people.

The political process will guarantee, among other things, the people's fundamental political rights and freedoms and restore their dignity through the delivery of democracy, political reform, justice, human rights and socio-economic development. We believe that such a solution will indeed ensure long-term peace and stability. We regret the slow progress in the implementation of the reforms already announced, and encourage the Syrian Government to implement these reforms expeditiously. We urge the opposition to commit to fully participating in the implementation of these reforms.

South Africa believes that the efforts of the League of Arab States, as the organization with knowledge of and proximity to the situation in Syria, should be supported and given the necessary political space to find a solution to the Syrian crisis. South Africa supports the efforts of the League of Arab States to facilitate the Syrian-led political process, as stated in the draft resolution. It is important that the Syrian people be allowed to decide their own fate, including their future leadership.

Fundamentally, no foreign or external parties should interfere in Syria as its people engage in the critical decision-making process on the future of their country. Any solution must preserve the unity, sovereignty and territorial integrity of Syria. We are also satisfied that the final draft resolution (S/2012/77) was not aimed at imposing regime change on Syria, which would be against the purposes and principles of the United Nations Charter.

We sincerely hope that the Syrian Government and the opposition will continue to cooperate with the League of Arab States in its efforts to assist them to reach a peaceful political solution. We further call on the international community to render support to this process and refrain from actions and statements that may polarize the parties and delay, or even paralyse, the League of Arab States process.

The current political environment in the Middle East, a region whose geopolitics cannot afford to have a weak or conflict-ridden Syria, warrants us to act responsibly in the interest of regional and international peace and security. South Africa voted in favour of the draft resolution today because we believe that it has the potential to help facilitate a Syrian-led political process and dialogue between the Syrian parties, and to bring long-term peace and stability to the country, in accordance with the aspirations of the Syrian people.

Mr. Musayev (Azerbaijan): Azerbaijan is deeply concerned at the continuing crisis and widespread violence in Syria that have resulted in the death of many people. Despite the repeated calls of the international community, the situation in Syria continues to deteriorate, causing scores of deaths and injuries. Azerbaijan has from the very beginning supported the efforts of the League of Arab States, and is looking forward to their continuation with a view to ending the violence, overcoming the crisis and finding a solution by peaceful means and through dialogue.

The only solution to the crisis in Syria is through an inclusive and Syrian-led political process with the aim of effectively addressing the legitimate aspirations and concerns of Syria's people, without external interference. This understanding is clearly expressed in the draft resolution (S/2012/77). It is crucial that obligations with respect to the sovereignty, territorial integrity and political independence of Syria and all other States of the region be fully observed and respected. It is important that the draft resolution emphasizes that the current political crisis in Syria must be resolved peacefully, and notes that nothing

authorizes measures under Article 42 of the United Nations Charter.

Azerbaijan supported the draft resolution on the aforementioned understanding and with the hope that its adoption would contribute to ongoing efforts aimed at encouraging dialogue, overcoming the crisis and putting an end to human suffering.

The President *(spoke in French)*: I shall now make a statement in my capacity as representative of Togo.

Togo had hoped that the situation that has prevailed in Syria for almost a year would allow the Security Council to send a strong message to the leaders and opposition in that country to end the violence and embark on a process of political negotiation that is inclusive and transparent. It was for that reason that Togo voted in favour of the draft resolution submitted by Morocco, and was a sponsor of the text. Unfortunately, the Council was not able to send this message to the Syrian political class, and my country deplores this state of affairs. Our Council, which has the primary responsibility for maintaining international peace and security, has failed once again to bring peace and security to Syria by speaking with a single voice.

Despite that failure, the Council should be able to continue to seek ways and means to bring peace to Syria. The Syrian people should not continue to suffer, cry and bury their dead as our Council remains impassive. The Security Council must act. Togo continues to believe that it is not too late for it to resolutely commit itself on the path of the necessary action that must be taken.

I now resume my function as President of the Council.

I now give the floor to the representative of the Syrian Arab Republic.

Mr. Ja´afari (Syrian Arab Republic) (*spoke in Arabic*): I congratulate your friendly country, Togo, and you yourself, Sir, on your assumption of the presidency of the Security Council for this month. We wish you all success in that sensitive stewardship. I would also like to congratulate my colleague Ambassador Sangqu of South Africa on presiding over the Council for the past month.

I think that drawing inspiration from history in this Chamber is an extremely important exercise. Invoking examples from the cultures and literatures of peoples and nations is a critical experience. As I say this, I recall the literary masterpiece by the German author Johann Wolfgang von Goethe entitled *Faust*. It is a work that speaks in symbolic terms of the risks inherent in a person's — even a very wise one — selling his soul to Satan. That symbolic story summarizes the idea with which I would like to begin my statement, which is that a human being should not sell his or her soul to Satan in exchange for illusory gains that could destroy that person's hopes for freedom further down the road.

My delegation has examined the text of the draft resolution put before the Council. Given our firm belief in the pan-Arab principle, we had hoped that the examination of the question of Syria would have remained, first, exclusively within the Syrian household, and then in the larger supporting Arab household structure.

However, the rush by some parties to invite international intervention — and we know in advance what their objectives are in dealing with Arab issues, which are first and foremost the question of Palestine and the Israeli occupation of Arab territories — is a cause for concern. It is indeed a cause for sadness, deep sadness for the regrettable state of affairs in which we now find ourselves.

At this point, I would like to quote in English a sentence spoken some 22 years ago by former United States Attorney General Ramsey Clark:

(*spoke in English*)

"The United Nations, which was created to prevent the scourge of war, has become an instrument of war."

(*spoke in Arabic*)

My delegation has followed with great appreciation the efforts by the advocates in the Council for human rights and the purposes and principles of the United Nations Charter, especially the inadmissibility of intervention in the internal affairs of countries, of waging wars against countries to gain exclusive control of their geographic location and their lucrative natural resources, and of resolving the economic problems of the Western Powers at the expense of the peoples of developing nations. To those States that safeguard international peace and security, we express our deep

gratitude and appreciation, and the annals of history will record the noble positions they take.

Is it not strange that over a period of 45 years — from its creation in 1945 to 1988 — the Security Council adopted only 690 resolutions, whereas in the following 20 years it adopted three times that number? That indicates that the current world is less secure, less just and less fair and that the provisions of the United Nations Charter are seriously threatened.

In this context, I would like to stress that the Syrian Arab Republic, a founding member of this world Organization, has been targeted by some Powers for punishment because of its commitment to international legal norms, especially on the issue of defending the human rights of peoples. Today, Syria is being sacrificed in a crisis manufactured by parties that do not want the best for Syria and its people. That is evident from their support — in funding, arms and favourable media coverage — for armed terrorist groups that kill, abduct and intimidate Syrian citizens and destroy and sabotage infrastructure, including power generation equipment, oil and gas pipelines, Ministry of Justice buildings and railroads.

Is there a sensible person who would believe that any government would commit massacres in any city on a day when the Security Council is scheduled to hold a meeting to examine the situation in that country? Would any entity put itself in such a position?

The most convincing proof of the criminal nature of those armed groups lies in the acts committed this very morning, which killed innocent people and destroyed homes as well as the buildings housing Syrian embassies in many capitals, all of that without any condemnation by the Secretary-General or the Council. The goal is to send a misleading message aimed at influencing the Council by swaying its decision-makers with respect to the draft resolution.

The best proof of our good intentions in our dealings with the League of Arab States is reflected in the contents of the report of the observers of the League of Arab States (see S/2012/71, annex, enclosure 4). What is very strange is that Council members did not examine that report in due time, for reasons known to all of them. The report confirms that Syria has fulfilled its obligations under the protocol.

Here, and for the fourth time at least, let me stress that if the killing had ceased, if those who pay lip service to democracy had ceased to implement their designs against Syria, if those States that provide generous funds — billions of dollars — and the most modern weapons and means of communication to the armed groups, hosting them in their capitals in order to facilitate their criminal acts against the Syrian people and their property, if they had ceased to do so, Syria would have fulfilled the League of Arab States plan of action and the relevant protocol under that plan.

Certain Arab Gulf States have dragged the League of Arab States to the Security Council, with a view to leveraging the Council's power against Syria and to internationalizing a purely Arab issue, contrary to the provisions of the Charter of the League of Arab States. That is in spite of the fact that since the beginning of the crisis, all of the Arab politicians in the League of Arab States have been competing among themselves to stress that they are not seeking the internationalization of the crisis in Syria.

The report of the observer mission that I mentioned earlier stresses that Syria has fulfilled its obligations despite the acts of violence. Let me quote here from the report:

> "The mission noted that the Government strived to help it succeed in its task and remove any barriers that might stand in its way. The Government also facilitated meetings with all parties. No restrictions were placed on the movement of the mission and its ability to interview Syrian citizens, both those who opposed the Government and those loyal to it." (*S/2012/71, annex, enclosure 4, para. 73)*

About two and a half months ago, the Qatari Al-Jazeera satellite channel broadcast from Doha a political programme hosted by a well-known journalist. The two guests on that programme were the current President of Tunisia — who was not the President at that time — and a Syrian political activist. During that programme, its host said, addressing the current Tunisian President, "Do not ask me about my sources, but I have received information from the highest levels in Doha to the effect that the Syrian regime will change on 22 January" — that is, the very day on which the League of Arab States met in Cairo and took the decision to come before the Security Council.

It is indeed strange that the calls for reform, respect for human rights and the right to peaceful demonstration apply to Syria only, not to any other

State in the region, especially those that sponsored the draft resolution submitted against Syria. Some of the Arab States that sponsored the draft are the very same ones that prevented the Arab League from endorsing the integrated initiative submitted by Syria to the League of Arab States on bolstering the process of democracy, reform and human rights in all Arab States. That initiative included a demand for the issuing of a decision by the Council of the Arab League that would put forward a comprehensive Arab vision aimed at promoting democracy and reform in all Arab countries and fulfilling the aspirations of the masses in the areas of freedom; human rights; a multiparty system; freedom of information; fair and transparent elections; freedom of expression; the right of assembly and peaceful demonstration; and respect for the rights of minorities, alien residents and expatriate workers on their territory.

Is it rational that among the sponsors of the draft are States that prevent women from attending a soccer match? And those States are calling on Syria to be democratic?

Peaceful demonstration is a basic right guaranteed under Syrian law. The right to demand reform is the right of every Syrian citizen, and no one can deny that. But what no law can prevent and no State can accept is terrorism, chaos and the sabotaging of public and private property — the destabilization of a country. Every peaceful demonstrator, every person who calls for genuine reform aimed at safeguarding the Syrian homeland from major schemes and all those who seek dialogue as a way to resolve the crisis are not only welcome partners but key components of any effort to end the crisis in Syria as well as an integral part of reform and development in Syria.

The draft resolution which the Council failed to adopt today emphasizes the importance of the dialogue that has been mentioned here. We are in favour of such a dialogue and wish to see it continue and succeed. But those who wish to be parties to such a dialogue have refused to engage in dialogue openly, and the Security Council and the League of Arab States are fully aware of that. Also aware of that fact are those countries that have sought, and continue to seek, to host such a dialogue. This comes at a time when my country has agreed, in the Council, to undertake immediately a national, comprehensive dialogue that is inclusive of all parties, but under the auspices of the homeland. However, the other side, which has stonewalled the undertaking of such a dialogue as a result of encouragement by some who wish to adopt dominating positions, has rejected dialogue and continues, even as we speak, to reject it.

It is our hope that the parties still supporting the opposition and armed groups — and those parties spoke about themselves, as some of my colleagues indicated in their statements — will sincerely advise their friends to foster a national dialogue, abandon all intentions to destroy Syria and to abandon all attempts to authorize outside military intervention. Indeed, they must join the ranks that will build Syria as it endeavours to renew itself.

Syria will enjoy security and stability as it always has. Syria will continue to be the homeland of tolerance and openness. Syria will remain the homeland of all Syrians, irrespective of their affiliations and political positions. There will be no majority and no minority. All of that will be developed on the ground in an initiative involving national ownership by the Syrian themselves and without external intervention. Syrians do not need to wait for lessons on democracy and human rights from Powers that deal with those lofty humanitarian concepts as if they were commodities to be traded speculatively on a stock exchange.

My colleague, the representative of the United States of America, said that she was disgusted at the use of the right of veto by two permanent members of the Security Council. I am not evaluating what she said. I respect her point of view. Nonetheless, I would like to ask her if her disgust also applies to the 60 vetoes that have been cast in this Chamber to prevent the establishment of a just, comprehensive and lasting peace in the region, the fair resolution of the Arab-Israeli conflict and the settlement of the question of Palestine.

The statements made by some colleagues betray the true and genuinely hostile intentions of their countries towards the country, people and Government of Syria. All along, the tone of their statements has been undiplomatic, and their description of the Syrian Government as a regime is inconsistent with the principles of international law. They used inappropriate language to refer to the President of the State of Syria. It is only natural for us to say that the use of those words in this Chamber by some colleagues betrays their direct involvement in attempts to fan the flames

of violence, escalation and bloodshed in Syria and among Syrians. We do not accept any of that.

I do not wish to speak at length, but I would like to conclude my remarks by raising an important matter. Today, a journalist working for Al-Jazeera's English channel in London said on record that the Ministry of Foreign Affairs of Qatar had instructed the channel to increase and intensify its coverage just hours before the convening of this meeting. I leave it to Council members to draw their own conclusions from the political instructions given to that self-proclaimed news channel to falsely step up the pressure on the Security Council by claiming that massacres are being carried out in Syria.

The President (*spoke in French*): There are no further speakers inscribed on my list. The Security Council has thus concluded this stage of its consideration of the item on its agenda.

The meeting rose at 1.25 p.m.