Old Dominion University

ODU Digital Commons

Computer Science: Research Experiences for Undergraduates in Disinformation Detection and Analytics

NSF Research Experiences for Undergraduates (REU) Programs 2022

Summer 2022

Human Interaction With Fake News

Autumn Woodson
Norfolk State University, a.n.woodson101645@spartans.nsu.edu

Sampath Jayarathna (Mentor)
Old Dominion University, ujayarat@odu.edu

Follow this and additional works at: https://digitalcommons.odu.edu/reu2022_computerscience

Part of the Computer Sciences Commons, and the Vision Science Commons

Recommended Citation

Woodson, Autumn and Jayarathna, Sampath (Mentor), "Human Interaction With Fake News" (2022). *Computer Science: Research Experiences for Undergraduates in Disinformation Detection and Analytics*. 6.
https://digitalcommons.odu.edu/reu2022_computerscience/6

This Presentation is brought to you for free and open access by the NSF Research Experiences for Undergraduates (REU) Programs 2022 at ODU Digital Commons. It has been accepted for inclusion in Computer Science: Research Experiences for Undergraduates in Disinformation Detection and Analytics by an authorized administrator of ODU Digital Commons. For more information, please contact digitalcommons@odu.edu.

Human Interaction With Fake News

Autumn Woodson
Computer Science
Norfolk State University
Mentor: Dr. Sampath

Project Background

Goal
Motivation

Preliminaries
Details

Project Tasks

Timeline
Coding

Articles
Eye Tracker Manual

Project Results

Machine learning

Project Findings

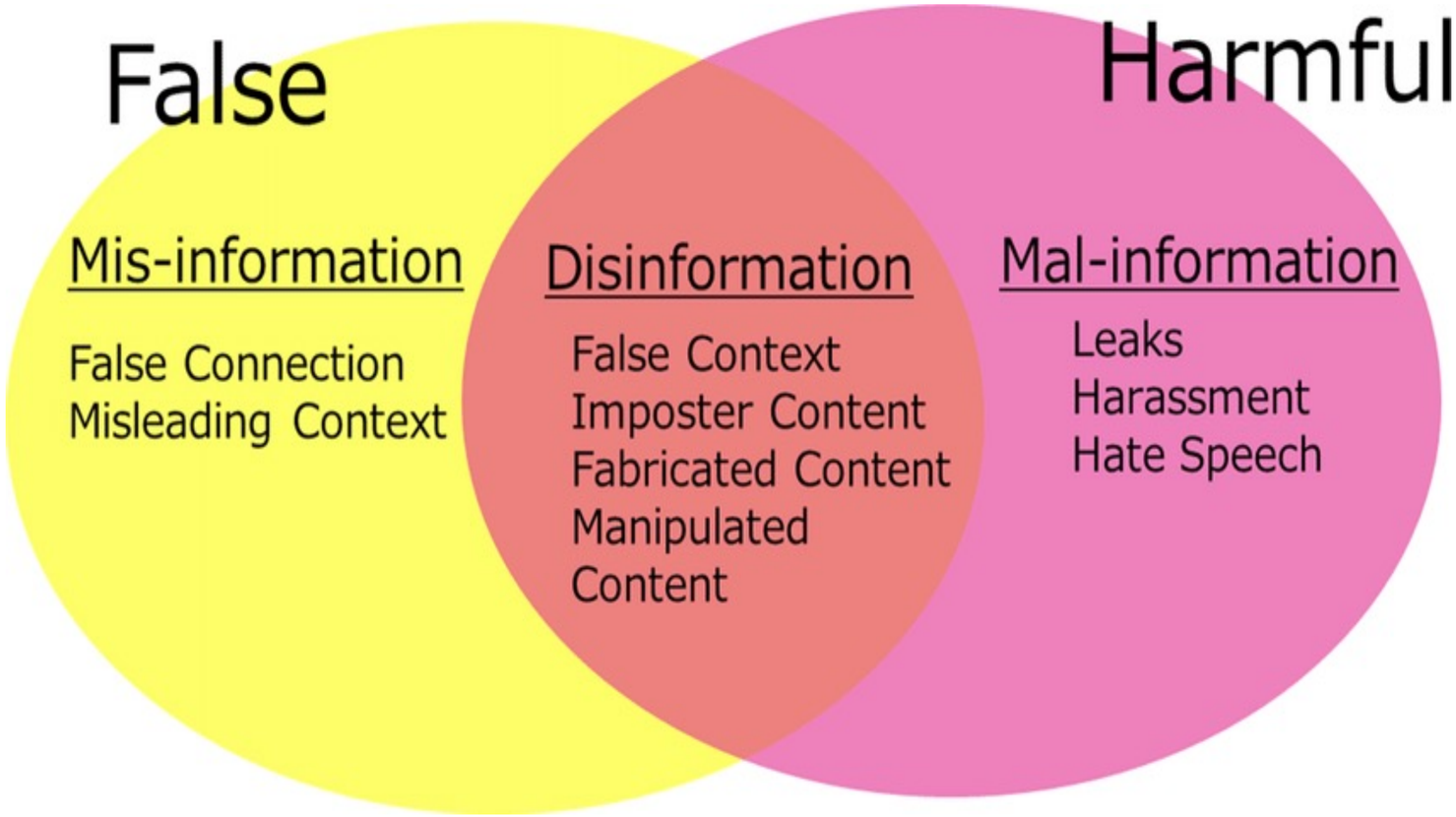
Project Goal

The goal of this project can be broken down into two parts:

1. To study reading patterns of participants
2. Use machine learning methods to identify direct measurements to analyze engagement

Both subgoals came from the eye tracker data collected from participants

Project Motivation



Preliminaries

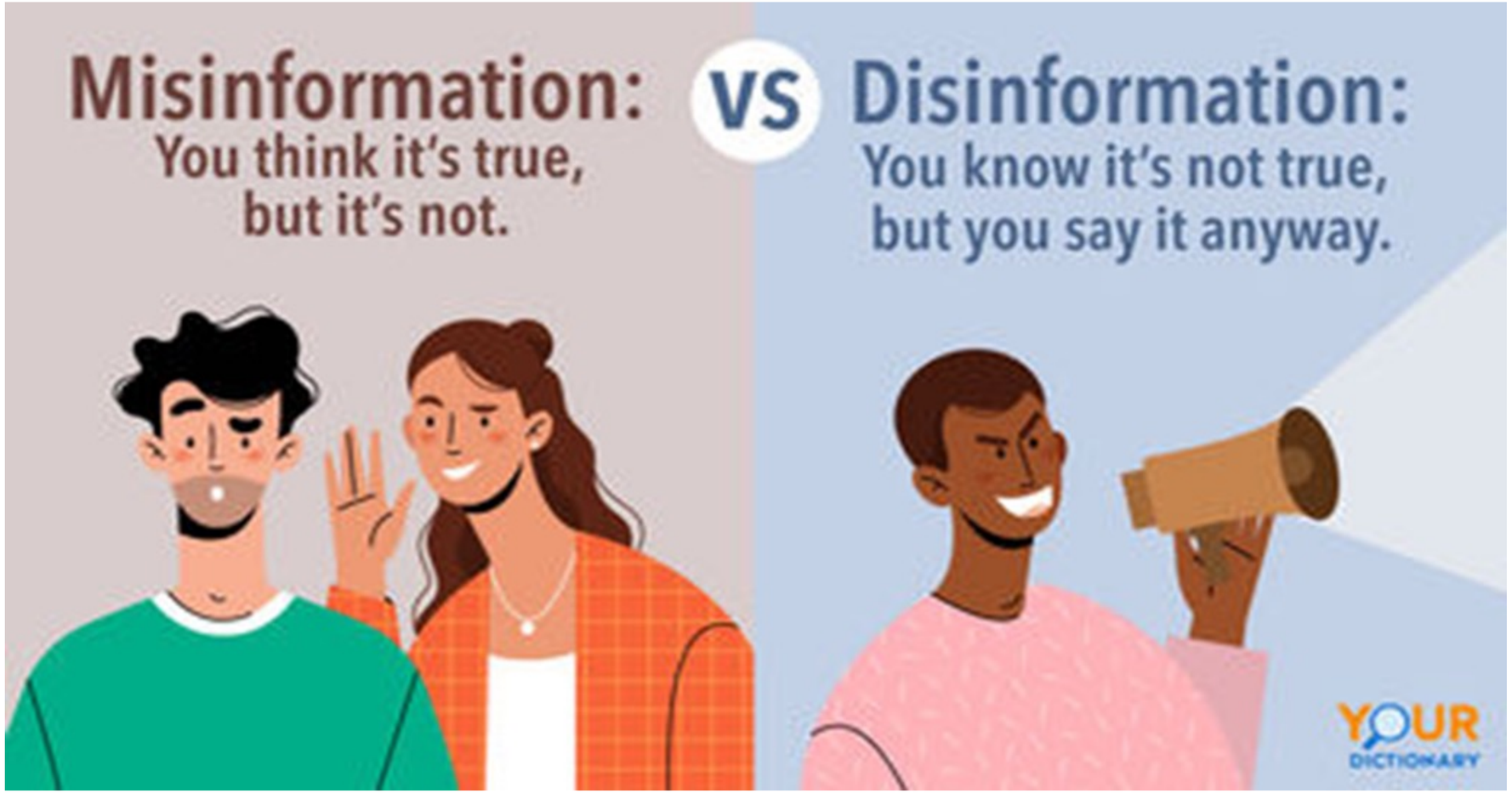
Disinformation

Fixation

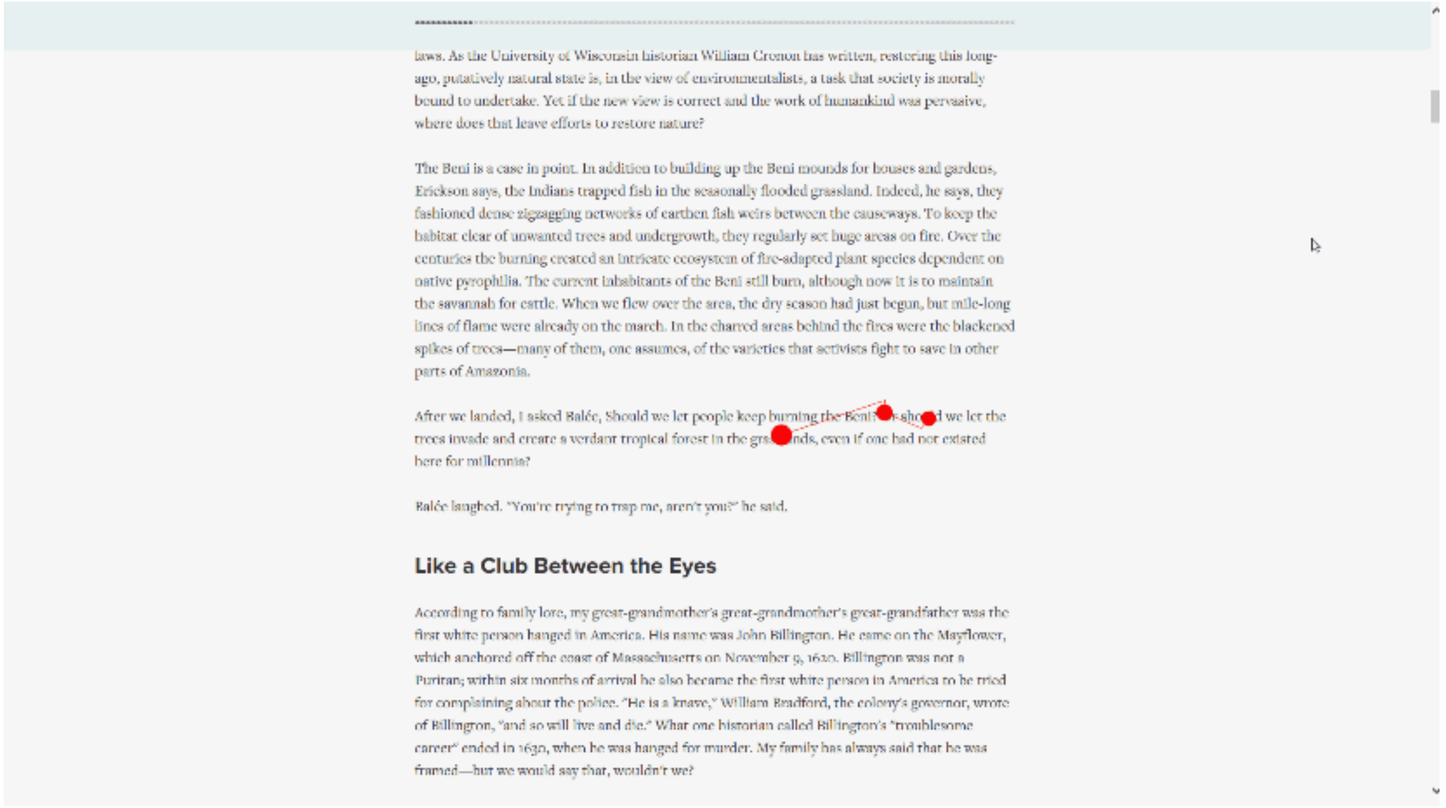
Saccade

Pupillometry

Disinformation



Fixation and Saccade



laws. As the University of Wisconsin historian William Cronon has written, restoring this long-ago, putatively natural state is, in the view of environmentalists, a task that society is morally bound to undertake. Yet if the new view is correct and the work of humankind was pervasive, where does that leave efforts to restore nature?

The Beni is a case in point. In addition to building up the Beni mounds for houses and gardens, Erickson says, the Indians trapped fish in the seasonally flooded grassland. Indeed, he says, they fashioned dense zigzagging networks of earthen fish weirs between the causeways. To keep the habitat clear of unwanted trees and undergrowth, they regularly set huge areas on fire. Over the centuries the burning created an intricate ecosystem of fire-adapted plant species dependent on native pyrophilia. The current inhabitants of the Beni still burn, although now it is to maintain the savannah for cattle. When we flew over the area, the dry season had just begun, but mile-long lines of flame were already on the march. In the charred areas behind the fires were the blackened spikes of trees—many of them, one assumes, of the varieties that activists fight to save in other parts of Amazonia.

After we landed, I asked Balée, Should we let people keep burning the Beni? Should we let the trees invade and create a verdant tropical forest in the grasslands, even if one had not existed here for millennia?

Balée laughed. "You're trying to trap me, aren't you?" he said.

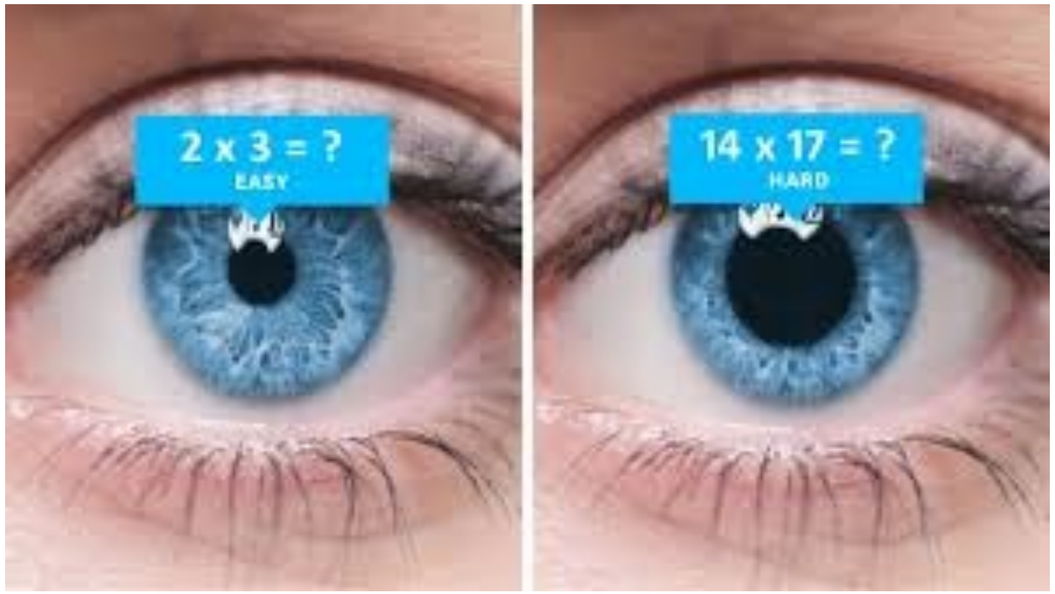
Like a Club Between the Eyes

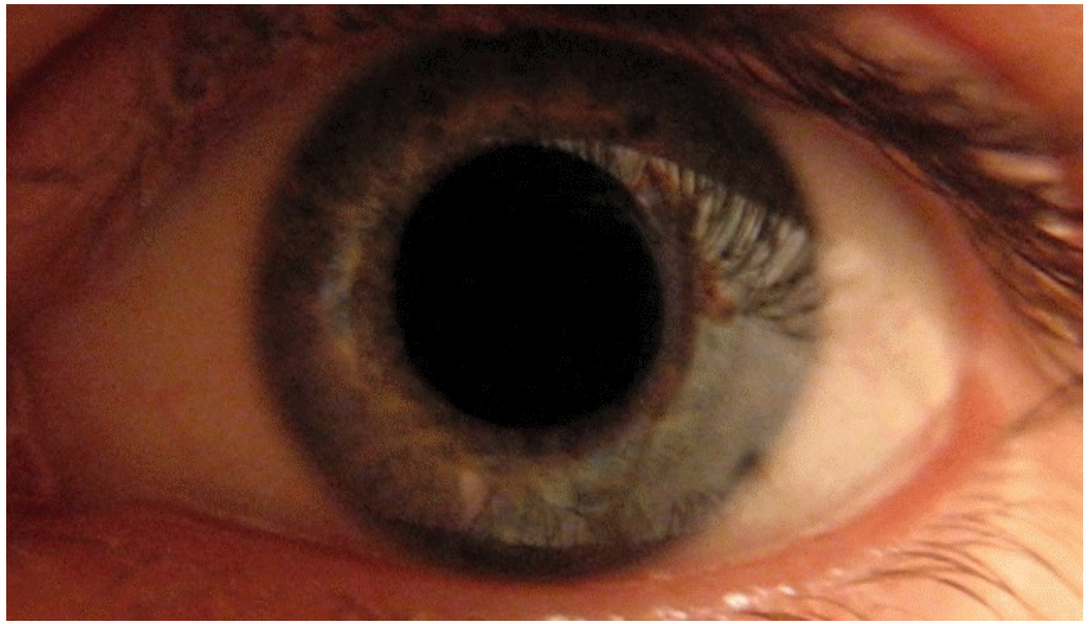
According to family lore, my great-grandmother's great-grandmother's great-grandfather was the first white person hanged in America. His name was John Billington. He came on the Mayflower, which anchored off the coast of Massachusetts on November 9, 1620. Billington was not a Puritan; within six months of arrival he also became the first white person in America to be tried for complaining about the police. "He is a knave," William Bradford, the colony's governor, wrote of Billington, "and so will live and die." What one historian called Billington's "troublesome career" ended in 1630, when he was hanged for murder. My family has always said that he was framed—but we would say that, wouldn't we?

Fixation: Eye are focused on a point

Saccade: Eyes are scanning between points

Pupillometry





Research Question

Can we determine if someone is processing and understanding the information given by studying a person's eye behavior?

Data Collected

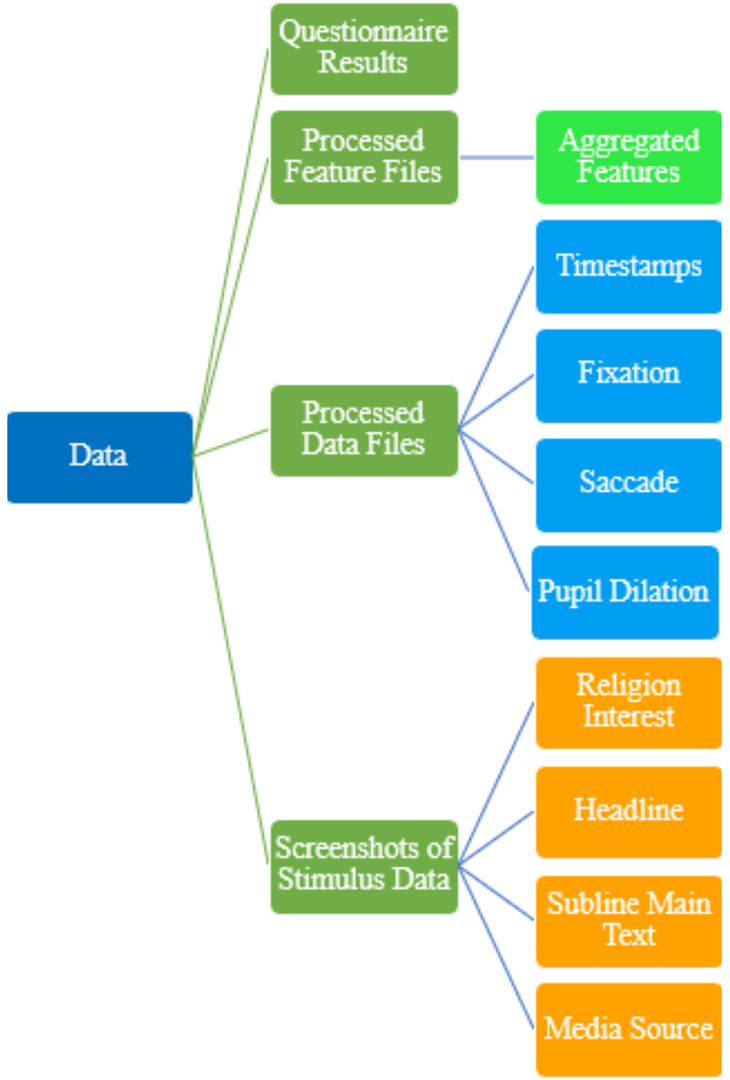
Data was collected by the University of Tubingen in Germany. The data was collected in three parts:

1. Participants read news articles without knowing the purpose of the study
2. Participants gave self-reported believability scores taken (using the same articles as before and Likert scores)
3. Participants complete questionnaires (CRT, NFM, self-reported political orientation and demographic information)

Sümer, Ö., Bozkir, E., Kübler, T., Grüner, S., Utz, S., & Kasneci, E. (2021). FakeNewsPerception: An eye movement dataset on the perceived believability of news stories. Data in brief, 35, 106909.

Bozkir, E., Kasneci, G., Utz, S., & Kasneci, E. (2022, June). Regressive Saccadic Eye Movements on Fake News. In 2022 Symposium on Eye Tracking Research and Applications (pp. 1-7).

Data Collected



Data Collected – questionnaire results

Cognitive Reflection Test

News-Find-Me Perception

political orientation

participant	gender	age	education	language	crt1	crt2	crt3	nfm1	nfm2	nfm3	nfm4	po
14	m	19	Abitur	Muttersprache	2.25	2	47	7	6	8	3	8
22	f	19	Abitur	Muttersprache	2.25	2	12	3	4	2	2	5
8	f	21	Abitur	Muttersprache							2	4
10	f	21	Abitur	Muttersprache								
11	f	21	Abitur	Muttersprache								
16	f	21	Abitur	Muttersprache								
23	f	22	Abitur	Muttersprache								
5	m	23	Bachelor	Muttersprache	3.25	2	47					
24	f	23	Bachelor	Muttersprache	1.5	2	12				1	3
13	f	24	Bachelor	Muttersprache	2.25	2	47	6	3	3	2	4
20	m	24	Abitur	C2	2.25	2	15	3	8	1	1	3
27	f	24	Bachelor	Muttersprache	2.25	200	47	8	4	6	1	2
6	m	26	Master	Muttersprache	2.25	2	47	8	3	6	1	5
9	f	26	Bachelor	Muttersprache	2	2	47	5	3	3	2	3
4	m	28	Master	Muttersprache	3.25	2	47	7	2	2	1	4
12	f	28	Abitur/Staatsexa	Muttersprache	2.25	2	24	7	9	3	1	4
15	m	28	Bachelor	Muttersprache	2.25	2	47	2	7	1	1	4
1	m	29	Master	Muttersprache	2.5	2	47	6	7	2	1	3
2	m	29	Bachelor	Muttersprache	2.25	2	47	4	2	3	1	3
3	m	29	Master	Muttersprache	2.25	2	47	5	3	4	1	2
18	f	29	Staatsexamen M	Muttersprache	nan	nan	nan	3	3	3	2	7
7	m	31	Master	Muttersprache	2.25	2	47	8	7	9	4	4
19	m	32	Master	B2	2.25	2	47	2	4	2	1	5
21	m	33	Bachelor	Muttersprache	2.25	2	47	3	5	5	3	5
26	f	38	Master	C1	2.25	2	47	1	3	1	1	6

Cognitive Reflection Test studies a person's cognitive response or "gut" feeling.

News Find Me Perception was asked to see where and/or how participants received news

Political Orientation was asked to see how political each participant was

Data Collected – Questionnaire Questions

Table 1
Questionnaire for Cognitive Reflection Test (CRT), News-Find-Me Perception (NFM), and political orientation. All questions were rated in 10-item Likert scale.

Item	Questions (in German)	Questions (in English)
crt1	Eine Suppe und ein Salat kosten insgesamt €5,50. Die Suppe kostet einen Euro mehr als der Salat, Wie viel kostet der Salat?	A soup and a salad cost a total of €5.50. The soup costs one euro more than the salad, How much is the salad?
crt2	Wenn 2 Krankenschwestern 2 Minuten brauchen, um den Blutdruck von 2 Patienten zu messen. Wie lange benötigen dann 200 Krankenschwestern, um den Blutdruck von 200 Patienten zu messen?	If 2 nurses take 2 min to measure the blood pressure of 2 patients. How long will it take 200 nurses to measure the blood pressure of 200 patients?
crt3	In einem See wachsen Seerosen. Jeden Tag verdoppelt sich die Menge der Seerosen. Die Seerosen brauchen 48 Tage, um den gesamten See zu bedecken. Wie lange würde es dauern, bis die Seerosen die Hälfte des Sees bedeckt haben?	Water lilies grow in a lake. Every day the amount of water lilies doubles. It takes 48 days for the water lilies to cover the entire lake. How long would it take for the water lilies to cover half of the lake?
nfm1	Ich verlasse mich darauf, dass meine Freunde mir sagen, was wichtig ist, wenn Nachrichten eintreten.	I rely on my friends to tell me what's important when news happens
nfm2	Ich kann gut informiert sein, auch wenn ich die Nachrichten nicht aktiv verfolge.	I can be well informed even when I don't actively follow the news
nfm3	Ich mache mir keine Sorgen darüber, dass ich auf dem Laufenden bleibe, weil ich weiß, dass die Nachrichten mich finden werden.	I don't worry about keeping up with the news because I know news will find me
nfm4	Ich verlasse mich auf Informationen von meinen Freunden, basierend auf Beiträgen, die sie auf sozialen Medien liken oder denen sie folgen.	I rely on information from my friends based on what they like or follow through social media
po	Wenn Sie an Ihre eigenen politischen Ansichten denken, wo würden Sie Ihre politische Grundhaltung einordnen?	When you think of your own political views, where would you classify your basic political stance?

Data Collected- Processed Features

How believable did the article sound

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	participan	question	version	viewingTir	fixationCo	saccadeCc	meanFixat	meanSacc	meanPupi	meanPupi	minFixatic	maxFixatic	minSaccac	maxSacca	viewingTir	believability
2	1	1	fake	8.023	28	31	239.25	32.71	0.832	0.831	87	480	15	60	13.022	4
3	1	2	TRUE	10.023	36	41	231.639	29	0.841	0.841	72	575	15	52	16.057	5
4	1	3	fake	18.012	66	75	228.621	28.173	0.867	0.866	67	640	2	78	14.063	2
5	1	4	fake	17.06	63	72	227.841	28.333	0.821	0.821	63	598	10	58	17.05	4
6	1	5	fake	22.082	78	85	245.718	26.741	0.852	0.851	77	597	12	72	15.025	2
7	1	6	fake	15.065	57	63	219.193	29.27	0.814	0.814	78	440	12	53	12.057	-1
8	1	7	fake	8.008	28	34	232.071	31.029	0.85	0.849	108	387	10	73	23.082	2
9	1	8	TRUE	11.065	42	53	215.929	29	0.826	0.825	67	442	3	77	14.055	4
10	1	9	TRUE	15.108	58	65	217.69	30.492	0.829	0.828	68	477	7	85	13.058	3
11	1	10	TRUE	14.16	50	53	247.52	30.208	0.816	0.816	67	512	8	72	13.182	4
12	1	11	TRUE	13.05	49	55	210.408	28.891	0.882	0.881	68	410	8	62	16.062	5
13	1	12	TRUE	10.025	36	38	226.111	32.079	0.819	0.819	117	350	7	83	14.987	4
14	1	13	TRUE	13.04	44	50	253.614	29.32	0.807	0.807	68	668	10	78	17.048	4
15	1	14	TRUE	10.022	38	43	219.026	31.395	0.808	0.808	82	595	13	58	14.023	4
16	1	15	TRUE	17.065	62	70	228.016	32.857	0.839	0.839	75	520	10	92	13.023	5
17	1	16	TRUE	13.043	42	50	230.619	30.86	0.837	0.836	105	430	2	122	14.017	2
18	1	17	TRUE	6.967	21	24	278.905	30.583	0.844	0.843	72	447	13	62	13.018	5
19	1	18	fake	14.013	57	64	200.93	26.672	0.842	0.841	60	470	7	48	19.058	2
20	1	19	TRUE	12.062	45	54	211.044	31.963	0.829	0.828	87	460	8	93	25.142	5

Participants and Tools

- 27 participants that took part in the experiment
- 25 out of the 27 participants data was used
- Each participant read 60 short articles
- Tobii spectrum desk mounted eye tracker with a 23.8-inch screen
- Screen resolution of 1920 x 1080
- Gaze point rate of 600 Hz

Tobii Spectrum Desk Mounted Eye Tracker

Article 4 – Part 1

Politik → Politics

China: How the coronavirus and quarantine are driving up marriage rate

After the registry offices in the central Chinese metropolis Xi'an opened their doors for the first time a week ago after the virus outbreak, there was a real rush. Many women and men proposed marriage … As a result of the epidemic, some couples admitted to getting through difficult times together and now nothing can endanger the togetherness anymore", explained an official

Article 4 – Part 2

Politik → Politics

China: How the coronavirus and quarantine are driving up marriage rate

After the registry offices in the central Chinese metropolis Xi'an opened their doors for the first time a week ago after the virus outbreak, there was a real rush. Many women and men proposed marriage … As a result of the epidemic, some couples admitted to getting through difficult times together and now nothing can endanger the togetherness anymore", explained an official

How credible do you rate this report?

1. very implausible 2. rather implausible 3. uncertain 4. believable 5. very believable

Article Data

False

Participant 1: 4

Participant 3: 3

Participant 6: 2

Participant 8: 2

Participant 9: 2

Participant 14: 3

Participant 16 3

Participant 20: 3

Participant 21: 4

Participant 23: 5

Participant 26: 2

Only participants: 6,8,9 and 26 answered correctly

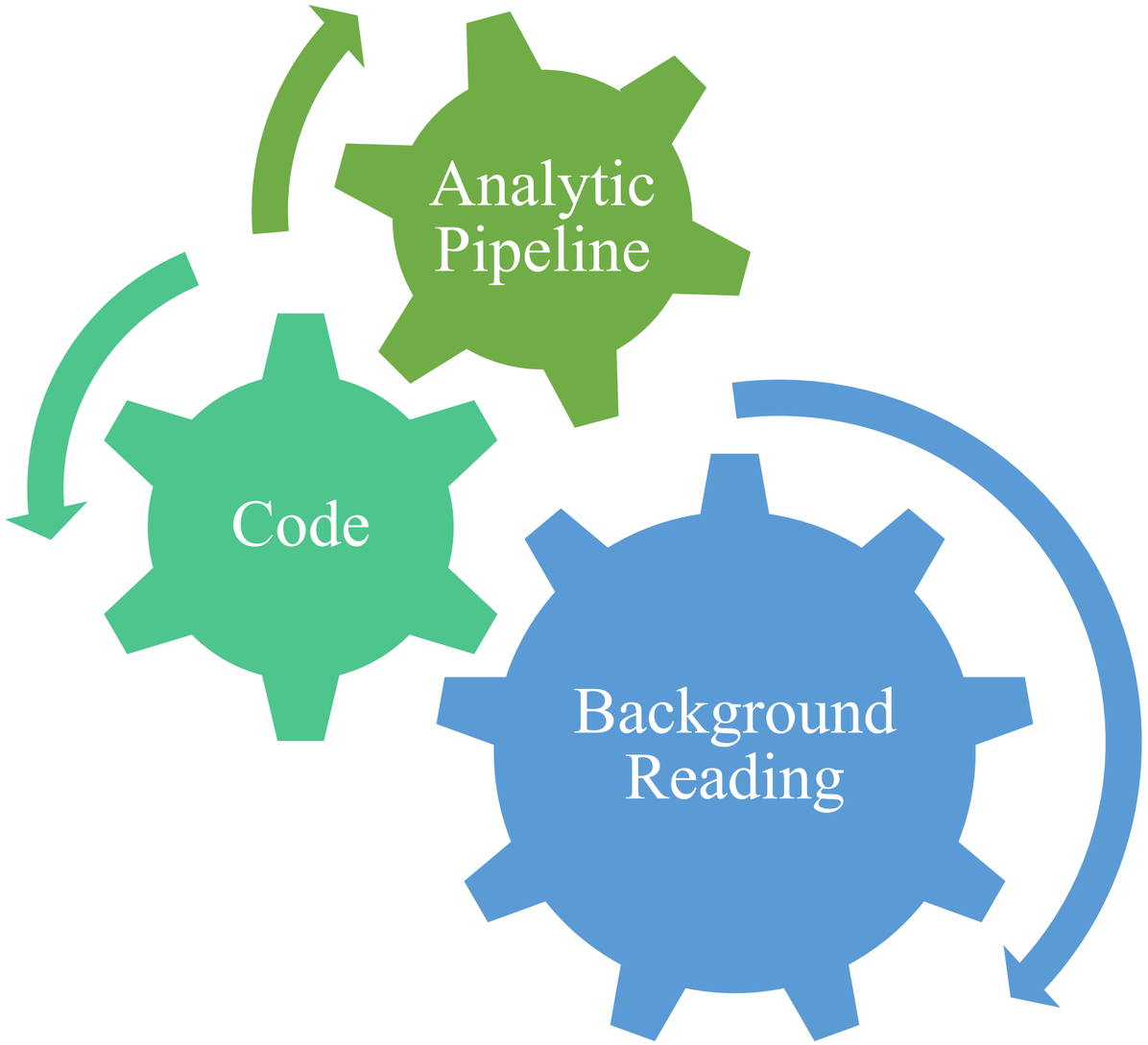
Article Data

View Time Sec

Believability

1	4 fake	17.06	63	72	227.841	28.333	0.821	0.821	63	598	10	58	17.05	4
3	4 fake	25.145	103	125	180.146	26.768	0.657	0.657	62	830	3	70	14.02	3
6	4 fake	22.142	82	94	234.451	25.989	0.64	0.64	63	675	2	80	17.06	2
8	4 fake	29.165	109	116	226.798	26.026	0.679	0.679	72	645	10	62	18.062	2
9	4 fake	55.247	207	224	223.715	29.138	0.759	0.759	68	1128	5	90	27.144	2
11	4 fake	18.102	76	86	191.658	30.756	0.715	0.714	78	445	13	72	13.06	3
14	4 fake	23.048	93	99	210.763	25.909	0.717	0.717	75	790	13	62	12.05	4
20	4 fake	18.32	78	92	194.077	23.739	0.621	0.62	95	353	7	57	14.055	3
21	4 fake	15.062	64	70	194.703	30.729	0.707	0.707	100	420	8	57	13.05	4
23	4 fake	16.067	56	56	241.786	31.875	0.62	0.62	92	447	12	85	13.002	5
26	4 fake	42.227	134	165	269.179	22.279	0.712	0.712	60	1475	3	87	13.058	2

Project Tasks



Code Part 1 – Removing Mouse Data

```python
import pandas as pd
import os


Raw_data_path = r"Data/RawData/RawDataFiles"
os.chdir(Raw_data_path)

Eye_movement_data_path = r"Data/RawData/EyeMovementDataFiles"


def read_raw_data_file(file_path):
    print("Reading the file at " + str(file_path))
    df = pd.read_csv(file_path, sep='\t')
    return df


def filter_out_mouse_data(df, file_name):
    print(df['Sensor'])

    df = df[df["Sensor"].str.contains("Mouse") == False]

    df2 = df.dropna(axis=0, how="all", thresh=None, subset="Sensor", inplace=False)

    print(df2)

    print("Writing eye movement data file " + str(file_name))
    file_name = file_name.replace('.tsv', '.csv')
    file_path = f"{Eye_movement_data_path}\{file_name}"
    df2.to_csv(file_path)


filenames = os.listdir()
os.chdir("../../..")

for file in filenames:
    if file.endswith(".tsv"):
        file_path = f"{Raw_data_path}\{file}"
        df = read_raw_data_file(file_path)
        filter_out_mouse_data(df, file)
```

Code Part 2 – Getting Ready for the Pipeline

```python
import pandas as pd
import os


Eye_movement_data_path = r"Data/RawData/EyeMovementDataFiles"
os.chdir(Eye_movement_data_path)

Filtered_eye_movement_data_path = r"Data/RawData/FilteredDataFiles"


def read_eye_movement_data_file(file_path):
    print("Reading the file at " + str(file_path))
    df = pd.read_csv(file_path)
    return df


def remove_invalid_data(df):
    df = df[df["Validity left"].str.contains("Invalid") & df["Validity right"].str.contains("Invalid") == False]
    return df


def change_commas_to_dots(df):
    df["Pupil diameter left"] = df["Pupil diameter left"].str.replace(',', '.')
    df["Pupil diameter right"] = df["Pupil diameter right"].str.replace(',', '.')
    return df


def filter_out_unwanted_columns(df):
    df = df.drop(['Event', 'Event value', 'Client area position X (DACSpx)', 'Client area position Y (DACSpx)',
                  'Viewport position X', 'Viewport position Y'], axis=1)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze point right Y", "Gaze point left Y"], inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze point right X", "Gaze point left X"], inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze direction right X", "Gaze direction left X"],
                   inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze direction right Y", "Gaze direction left Y"],
                   inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze direction right Z", "Gaze direction left Z"], inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Pupil diameter right", "Pupil diameter left"],  inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Eye position right X (DACSmm)", "Eye position left X (DACSmm)"], inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Eye position right Y (DACSmm)", "Eye position left Y (DACSmm)"], inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Eye position right Z (DACSmm)", "Eye position left Z (DACSmm)"], inplace=False)
```

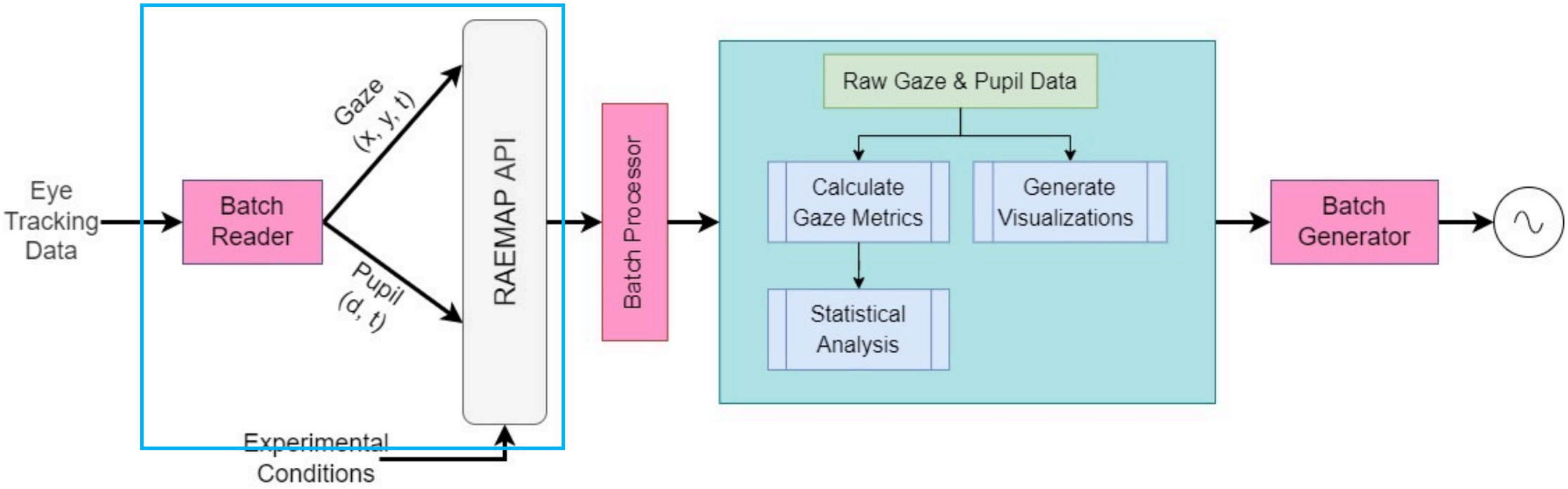
```python
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze point right X (DACSmm)",  "Gaze point left X (DACSmm)"],inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze point right Y (DACSmm)", "Gaze point left Y (DACSmm)"],inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze point right X (MCSnorm)", "Gaze point left X (MCSnorm)"], inplace=False)
    df = df.dropna(axis=0, how="all", thresh=None, subset=["Gaze point right Y (MCSnorm)", "Gaze point left Y (MCSnorm)"], inplace=False)
    df.drop('Viewport width', axis=1, inplace=True)
    df.drop('Viewport height', axis=1, inplace=True)
    df.drop('Full page width', axis=1, inplace=True)
    df.drop('Full page height', axis=1, inplace=True)
    df.drop('Mouse position X', axis=1, inplace=True)
    df.drop('Mouse position Y', axis=1, inplace=True)
    return df


def process_invalid_eye_movement_data(df):
    df['Gaze point left X'] = df['Gaze point left X'].fillna(0)
    df['Gaze point right X'] = df['Gaze point right X'].fillna(0)
    df['Gaze point left Y'] = df['Gaze point left Y'].fillna(0)
    df['Gaze point right Y'] = df['Gaze point right Y'].fillna(0)

    df['Pupil diameter left'] = df['Pupil diameter left'].fillna(0)
    df['Pupil diameter right'] = df['Pupil diameter right'].fillna(0)

    # The implementation is done with the assumption that X and Y gaze points are higher than the
    # resolution are 1920 and 1080
    df.loc[df['Gaze point left X'] > 1920, 'Gaze point left X'] = 1920
    df.loc[df['Gaze point right X'] > 1920, 'Gaze point right X'] = 1920

    df.loc[df['Gaze point left X'] < 0, 'Gaze point left X'] = 0
    df.loc[df['Gaze point right X'] < 0, 'Gaze point right X'] = 0

    df.loc[df['Gaze point left Y'] > 1080, 'Gaze point left Y'] = 1080
    df.loc[df['Gaze point right Y'] > 1080, 'Gaze point right Y'] = 1080

    df.loc[df['Gaze point left Y'] < 0, 'Gaze point left Y'] = 0
    df.loc[df['Gaze point right Y'] < 0, 'Gaze point right Y'] = 0

    return df

def group_presented_stimulus(df, file):
    print(df['Presented Stimulus name'].unique())
    # group = df.groupby(df['Presented Stimulus name'])
```

Code Part 2

```
84      split_values = df['Presented Stimulus name'].unique().tolist()
85      print (split_values)
86      for value in split_values:
87          df1 = df[df['Presented Stimulus name'] == value]
88          file_split = file.split("_")
89          output_filename = "P" +  file_split[0]  + "_" + str(value) + ".csv"
90          print (output_filename)
91          df1.to_csv(f"Data/RawData/StimulusDataFiles/{output_filename}")
92
93
94  def extract_required_data_columns(df, file_name):
95      df2 = df[['Gaze point left X', 'Gaze point right Y', 'Gaze point left Y',
96                'Gaze point right X', 'Pupil diameter left', 'Pupil diameter right',
97                'Recording timestamp','Eyetracker timestamp']]
98
99      file_name = "Filtered_" + file_name
100     file_path = f"{filtered_eye_movement_data_path}\{file_name}"
101     df2.to_csv(file_path)
102     return df2
103
104 # def get_pupil_diameter_min_and_max(df):
105 #     print(df['Pupil diameter left'].min())
106 #     print(df['Pupil diameter left'].max())
107 #     print(df['Pupil diameter right'].min())
108 #     print(df['Pupil diameter right'].max())
109
110
111 filenames = os.listdir()
112 os.chdir("../../..")
113
114 for file in filenames:
115     if file.endswith(".csv"):
116         file_path = f"{Eye_movement_data_path}\{file}"
117         df = read_eye_movement_data_file(file_path)
118         df = remove_invalid_data(df)
119         df = change_commas_to_dots(df)
120         df = filter_out_unwanted_columns(df)
121         df = process_invalid_eye_movement_data(df)
122         group_presented_stimulus(df, file)
123
```

```
109
110
111 filenames = os.listdir()
112 os.chdir("../../..")
113
114 for file in filenames:
115     if file.endswith(".csv"):
116         file_path = f"{Eye_movement_data_path}\{file}"
117         df = read_eye_movement_data_file(file_path)
118         df = remove_invalid_data(df)
119         df = change_commas_to_dots(df)
120         df = filter_out_unwanted_columns(df)
121         df = process_invalid_eye_movement_data(df)
122         group_presented_stimulus(df, file)
123
124 Stimulus_data_path = r"Data/RawData/StimulusDataFiles"
125 os.chdir(Stimulus_data_path)
126 filenames = os.listdir()
127 os.chdir("../../..")
128 for file in filenames:
129     if file.endswith(".csv"):
130         file_path = f"{Eye_movement_data_path}\{file}"
131         df = extract_required_data_columns(df, file)
132         # get_pupil_diameter_min_and_max(df)
```

Analytic Pipeline



Project Outcomes and Pitfalls

Ran into problems because of:

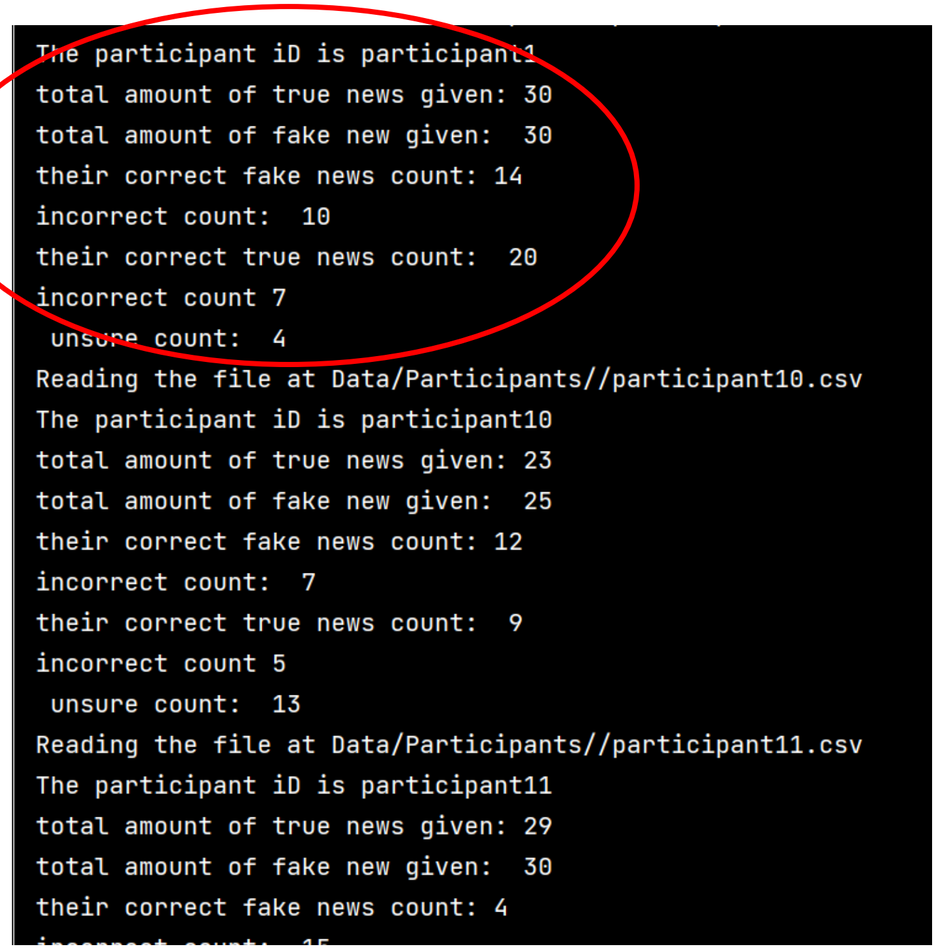
- Processing time
- File size
- Data needed
- Coding Errors

However, we fixed the issue, and are now in the process of putting the correct files through the pipeline. We will continue with our research in the future.

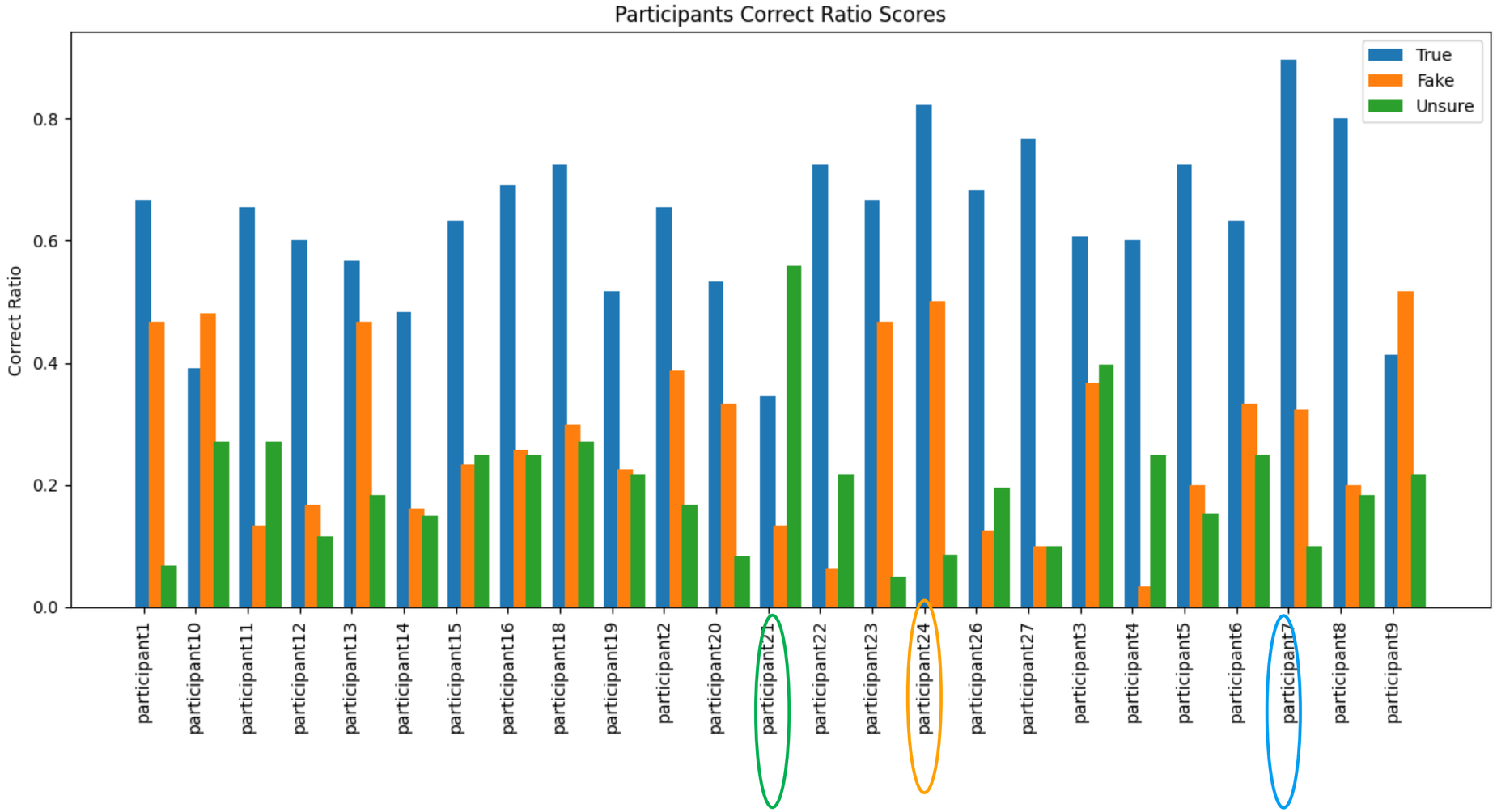
Code Part 3

```
def count_fake_true_believability_rate(df, file):
    participant_id = file.split(".")[0]
    total_fake_news = 0
    total_true_news = 0
    correct_fake_count = 0
    correct_true_count = 0
    incorrect_fake_count = 0
    incorrect_true_count = 0
    unsure_count = 0
    for index, row in df.iterrows():
        if row['version'] == 'fake':
            total_fake_news = total_fake_news + 1
        else:
            total_true_news = total_true_news + 1
        if row['believability'] > -1:
            if row['version'] == 'fake' and (row['believability'] == 1 or row['believability'] == 2):
                correct_fake_count = correct_fake_count + 1
            elif row['version'] == 'fake' and (row['believability'] == 4 or row['believability'] == !
                incorrect_fake_count = incorrect_fake_count + 1
            elif row['version'] == 'TRUE' and (row['believability'] == 4 or row['believability'] == 5):
                correct_true_count = correct_true_count + 1
            elif row['version'] == 'TRUE' and (row['believability'] == 1 or row['believability'] == 2):
                incorrect_true_count = incorrect_true_count + 1
            else:
                unsure_count = unsure_count + 1

    print("The participant iD is " + participant_id)
    print("total amount of true news given:", total_true_news)
    print("total amount of fake new given: ", total_fake_news)
    print("their correct fake news count:", correct_fake_count)
    print("incorrect count: ", incorrect_fake_count)
    print("their correct true news count: ", correct_true_count)
    print("incorrect count", incorrect_true_count)
    print(" unsure count: ", unsure_count)
```

Participants Correct to Incorrect Ratio



Graph


Participants Correct Ratio Scores
True
Fake
Unsure
Correct Ratio
0.0
0.2
0.4
0.6
0.8
participant1
participant10
participant11
participant12
participant13
participant14
participant15
participant16
participant18
participant19
participant2
participant20
participant21
participant22
participant23
participant24
participant26
participant27
participant3
participant4
participant5
participant6
participant7
participant8
participant9

Summary

During the Internship:

- Formatted data to be put through the analytic pipeline using data wrangling techniques
- Studied the pupil dilation of each participant after the first and second time reading the articles they received
- Concluded that participants who could detect the fake and true news correctly had a higher pupil dilation and time sec .

Future:

- ACM ETRA 2023

Citations

Trevethan, C. T., & A. Sahraie, A. (2009). *Pupillometry*. Pupillometry - an overview | ScienceDirect Topics. Retrieved July 27, 2022, from https://www.sciencedirect.com/topics/medicine-and-dentistry/pupillometry#:~:text=Pupillometry%20is%20the%20measurement%20of,into%20the%20mechanisms%20mediating%20blindsight

Learn about the different types of eye movement - Tobii Pro. (2015, August 6). Retrieved July 27, 2022, from https://www.tobiipro.com/learn-and-support/learn/eye-tracking-essentials/types-of-eye-movements/#:~:text=a%20fixation%20is%20composed%20of,longer%20fixations%20have%20been%20reported)

Sümer, Ö., Bozkir, E., Kübler, T., Grüner, S., Utz, S., & Kasneci, E. (2021, March 1). *Fakenewsperception: An eye movement dataset on the perceived believability of news stories*. Data in Brief. Retrieved July 27, 2022, from https://www.sciencedirect.com/science/article/pii/S235234092100193 1

Jayawardena, G. (2020, June 1). *RAEMAP: Real-time Advanced Eye Movements Analysis Pipeline: ACM Symposium on Eye Tracking Research and Applications*. ACM Conferences. Retrieved July 27, 2022, from https://dl.acm.org/doi/fullHtml/10.1145/3379157.3391992