MoralStrength: Exploiting a Moral Lexicon and Embedding Similarity for Moral Foundations Prediction

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Link to Preprint!!

Research Question

Can we better predict the moral rhetoric in user-generated text?

Moral values influence the way we rationalize and take a stance upon controversial topics, like a**bortion, homosexuality, climate change,** or even **vaccine hesitancy**.

They are also closely related to our **political views** and the opinion formation mechanisms regarding **immigration, political extremism, and poverty.**

Here we propose the new ***MoralStrength lexicon*** for morality analysis.

Moral Foundations Theory

Care/Harm: virtues of caring and compassion.
Fairness/Cheating: unfair treatment, inequality, notions of justice.
Loyalty/Betrayal: obligations of group membership, loyalty, vigilance against betrayal.
Authority/Subversion: social order, obligations of hierarchical relationships such as obedience, respect
Purity/Degradation: physical and spiritual contagion, virtues of chastity, wholesomeness and control of desires.
Liberty/Oppression: feelings of reactance and resentment people feel toward those who dominate them and restrict their liberty

Moral Foundations Dictionary (MFD)

(i) a limited amount of lemmas and stem of words
(ii) radical lemmas rarely used in everyday language, e.g. homologous, apostasy
(iii) an association with a moral bipolar scale, so-called vice and virtue, but without any indication of **strength**.

MoralStrength Dictionary

(i) contains 5 times more lemmas with respect to the MFD (~1000)
(ii) expansion via WordNet including common use words
(iii) human annotations of "strength" in a Likert-Scale for all lemmas

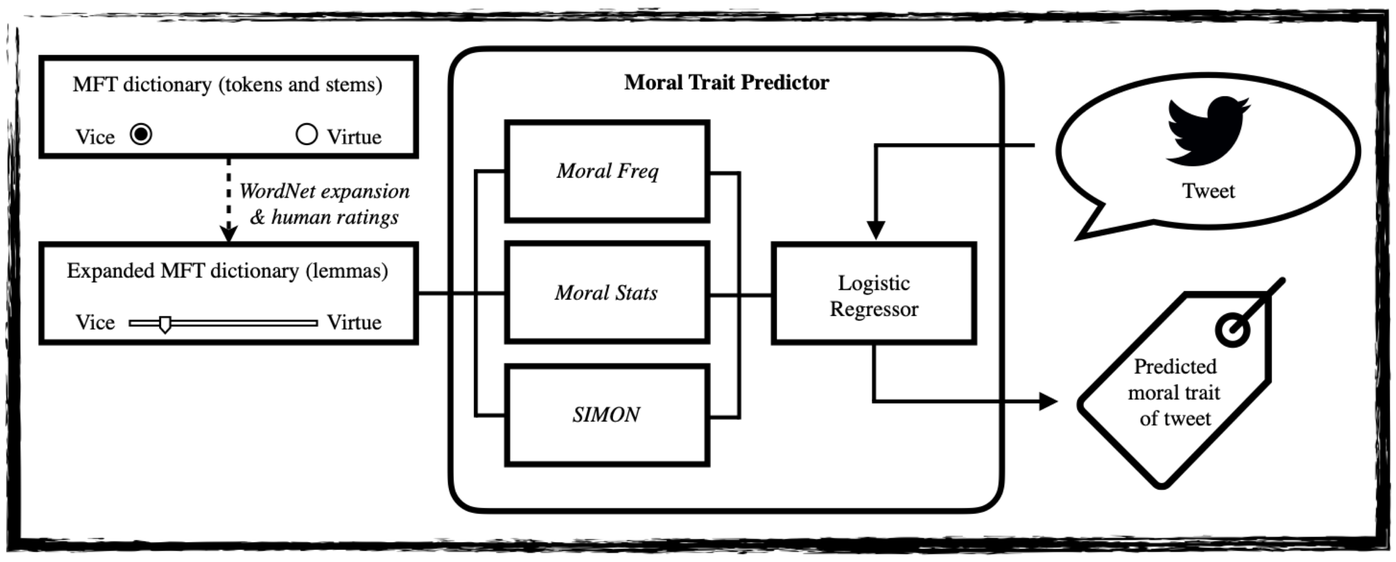
Evaluation

We evaluated our framework on the Moral Foundations Twitter Corpus which conists of 7 datasets of various topics and contains approximately **35,000 annotated tweets.**

We propose three approaches of increasing complexity which employ the MoralStrength lexicon to predict the moral rhetoric:

Moral Freq: frequency counts of the lemmas
Moral Stats: statistical summary of the lemmas
SIMON: word embedding similarity based representations

Our Framework



Baseline Models: Unigrams and frequency counts with MFD
Simple Models: Moral Freq, Moral Stats, SIMON
Combined Models: SIMON + Moral Freq, SIMON + Moral Stats, SIMON + Moral Freq + Moral Stats

Outperforming the current state-of-the-art.
On average F1-score of 86.25% vs 44,30% (p-value< 0.01) over all datasets.

Take Home Message

MoralStrength provides a tool for a more in-depth understanding of the moral narratives.

Still, there are many points for further research since context, culture, and medium may affect the expression of morality.

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