

Ling 573: Project Report D#1

Predicting Human Empathy and Emotion

Divy Sharma (divy@uw.edu), Alonso Ma (amatake@uw.edu),
Manisha Singh (manishas@uw.edu)

Abstract

To be updated in next deliverables.

1 Introduction

As human-computer interactions continue to become a vital part of our lives, embedded in applications where form is as relevant as substance (e.g. conversational agents), it is of utmost importance that computer systems exhibit natural interactions with the ability to recognize and express affect. The field of Affective Computing, as proposed by (Picard, 2000), aims to endow computer systems with the capability to mimic our understanding of how emotions influence human perception and behavior. This is particularly relevant in light of the fact that a vast majority of U.S. adults (86%) receive news through digital devices such as smartphones, computers, or tablets (Shearer, 2021). This project focuses on predicting empathy elicited from news stories. *(Additional details for the introduction will be updated in next deliverables.)*

2 Task Description

This project is organized to address a primary task and an adaptation task. The description of the primary task is provided in (Section 2.1) and the description of the adaptation task is provided in (Section 2.2)

2.1 Primary Task

The primary task in this project is based on the shared task on WASSA 2022 Shared Task on Empathy Detection and Emotion Classification (Buechel et al., 2018), organized at (WASSA, 2022) and whose final results are published at (Barriere et al., 2022). The affect type of the task is emotion. The genre of the dataset is news articles, the modality is text, and the language is English.

The primary task for this project is the first subtask of the (WASSA, 2022) shared task, Empathy Prediction, which consists of predicting both the empathy concern and the personal distress at the essay-level. This is a regression task. The dataset used in this project is the same as the one used in the shared task, and can be downloaded from (WASSA, 2022). The dataset contains empathic essay reactions to news stories, with associated Batson empathic concern and personal distress scores for each response. In addition to these scores, each response in the dataset contains gold standard labels for emotion, demographic information (age, gender, education, race, income) of the person who submitted the response, as well as the personality type of the writer.

The training data for this task consists of 1860 responses with gold standards for Empathy Prediction subtask. The development data consists of 270 responses with gold standard labels, and the test data contains 525 responses, but without gold standard labels. The evaluation criteria for the Empathy Prediction task is the average Pearson correlation of the empathy scores and the distress scores.

2.2 Adaptation Task

The adaptation task for this project is based on the WASSA 2023 Shared Task on Empathy Emotion and Personality Detection in Interactions (WASSA, 2023) This shared task builds on the shared task from (WASSA, 2022) and includes dyadic (two person) text conversations about news articles. The dataset, described in (Omiaomu et al., 2022), can be downloaded from the (WASSA, 2023) website. This dataset complements the Empathic Reactions dataset by (Buechel et al., 2018) by providing conversational interactions rather than only first-person statements.

The selected adaptation task for this project is Empathy and Emotion Prediction in Conversations, which involves predicting the perceived empathy, emotion polarity and emotion intensity at the speech-turn-level in a conversation. This is a regression task. The affect type of this task is emotion, and the genre of the dataset is news articles. The modality is text, and the language is English. This adaptation task differs from the primary task in that the primary task focuses on first-person text while the adaptation task focuses on turn-by-turn conversations. One potential application for this task is to develop and evaluate conversational AI agents, such as ChatGPT, that are capable of producing and processing empathetic responses in human-AI interactions.

The training data for this task consists of 792 conversations with gold values for empathy and distress. Each of these conversations is further organized at the turn-level with 8,777 turns and has gold standard values for empathy, emotion, and emotional polarity.

The evaluation criteria for the Empathy and Emotion Prediction in Conversations task is the average of the three Pearson correlations: Pearson correlation of empathy, Pearson correlation of emotional polarity, and Pearson correlation of emotional intensity.

3 System Overview

To be updated in subsequent deliverables.

4 Approach

To be updated in subsequent deliverables.

5 Result

To be updated in subsequent deliverables.

6 Discussion

To be updated in subsequent deliverables.

7 Ethical considerations

To be updated in subsequent deliverables.

8 Conclusion

To be updated in subsequent deliverables.

9 References

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