Psychological Stress Classification Using Natural Language Processing & Deep Learning

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COMP 599 & LING 484/782 Fall 2022



Motivation

- Stress is at the heart of most of the diseases that society faces today.
- People express stress on social media nowadays.
- Could Machine Learning / Deep Learning be used to evaluate stress levels of the posts?
- Few of the applications could be follow -
 - 1) Identify which company's interview process have more stress from glassdoor reviews.
 - Risk assessment for self-harm and depression in online socila media forums.
 - 3) (Negative Emotion Detection) of any textual corpous.

How to attack the problem

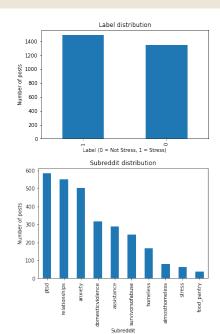
- The first step of this project is to implement (& reproduce) the Dreaddit paper methods for classification to establish a baseline.
- The next step would be to improve the baselines results by adding two classifiers (BiLSTM and CNN) alongwith rigorous feature selection and pre-processing.
 For example According to some sources punctuation has a meaningful role in expressing emotion, and stress is one of them. Due to this fact, we can add a new feature that will normalized number of punctuations per text. We can calculate this by counting the number of punctuations, divided by the length of the text.

Dataset

- Dreaddit
 3500 Reddit posts with binary labels
 stressful, non-stressful.
- An example of stress being expressed in social media from the dataset. Some possible expressions of stress are highlighted.

Everything sets me off and I'm almost having a panic attack. I'm going to my dads soon and that also makes me anxious because I'm afraid that I'm not in the mental state to go there and I want to stay at my moms but he really isn't happy when I do that. Anyway when she complains or is feeling bad I comfort her and I've never raised my voice at her even when frustrated. When she thinks I disagree with her she raises her voice, I have to talk about what she wants to in general right now because she gets impatient easily. I feel like vomiting because she also has so many redeeming factors but I don't want to lose her as a friend.

Dataset Visualization



Thank you for listening!