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A Computational Approach to Understand Mental Heal
Knowledge-Aware Multitask Learning Frame

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Abstract

Analyzing gender is critical to study mental health (MH) support in CVD (cardiovascular disease). The existing studies on using social media for extracting MH symptoms consider symptom detection and tend to ignore user context, disease, or gender. The current study aims to design and evaluate a system to capture how MH symptoms associated with CVD are expressed differently with the gender on social media. We observe that the reliable detection of MH symptoms expressed by persons with heart disease in user posts is challenging because of the co-existence of (dis)similar MH symptoms in one post and due to variation in the description of symptoms based on gender. We collect a corpus of 150k items (both posts and comments) annotated using the subreddit labels and transfer learning approaches. We propose GeM, a novel task-adaptive multi-task learning approach to identify the MH symptoms in CVD patients based on gender. Specifically, we adapt a knowledge-assisted RoBERTa based bi-encoder model to capture CVD-related MH symptoms. Moreover, it enhances the reliability for differentiating the gender language in MH symptoms when compared to the state-of-art language models. Our model achieves high (statistically significant) performance and predicts four labels of MH issues and two gender labels, which outperforms RoBERTa, improving the recall by 2.14% on the symptom identification task and by 2.55% on the gender identification task.

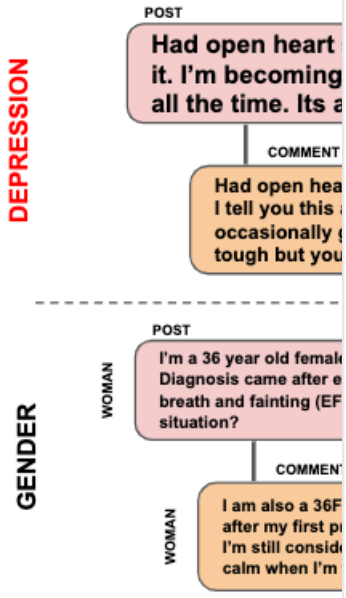

Figure 1: Our framework of
CVD MH symptoms– Depr
We differentiate between ge
Our computational approach
symptoms and the underlyin

Introduction

pathways in people leads to
tal Health (MH) disorders a
of Medicine study establish
between MH disorders of