

ABSTRACT

CRISIS-BERT: A SOCIAL MEDIA-BASED CRISIS AWARE NLP MODEL FOR EARLY DETECTION OF CRISIS AMONG VETERANS

Nadiyah Johnson

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Millions of US service members have been deployed to Iraq and Afghanistan over the past decade. When returning home, many veterans experience difficulties reintegrating into civilian society. Veterans are often faced with challenges finding employment, completing higher education and reconnecting to friends and family. These challenges often result in or exacerbate existing mental health issues. Post-Traumatic Stress Disorder (PTSD) is a mental disorder that impacts between 15-20% of veterans. It is a national priority to find innovative solutions to PTSD experienced by veterans returning from their duty.

In recent studies Veterans Affairs defines PTSD by its association to specific high-risk behaviors rather than defining PTSD based on a combination of psychiatric symptoms. PTSD has been documented to be an indicator and precursor of impending crisis. Identifying the symptoms of PTSD can support the mitigation of progression to more severe mental health crisis. These crisis states can manifest as at-risk behavior such as substance abuse, dangerous impulsive activities, or angry outbursts (AOB). In this digital era more people express their fear, anxiety, grief and anger on social networking sites while experiencing crisis.

There is very little research on identifying crisis data in social media posts, within the veteran community, as a preventative measure against escalated at-risk behavior and negative outcomes. In this study, we outline a three-phase approach to creating a system to identify and detecting veteran specific crisis text data. The key objective of our study is to examine social media posts to reveal how both the veteran population and civilians express crisis. In the first phase, we develop a computational grounded theory approach. We identify a lexicon of terms that are more common among veterans with PTSD prone to crisis. Our study emphasizes the difference in language used on social media between both veteran and civilian population. The study progresses into the second phase which develops a feature fusion approach that creates a new NLP architecture. The last phase of this study aims to develop CrisisBERT an NLP model geared to detect crisis within military veterans.

In this study, we expand the knowledge base of crisis events on social media within veteran communities. This research will contribute to a broader study on building preventative mHealth systems to combat PTSD in veterans.