Chapter 13
Mental Stress Detection Using Bidirectional Encoder Representations From Transformers

A. Vennila
Kongu Engineering College, India

S. Balambigai
Kongu Engineering College, India

A. S. Renugadevi
https://orcid.org/0000-0003-0619-3088
Kongu Engineering College, India

J. Charanya
https://orcid.org/0009-0003-8880-9639
Kongu Engineering College, India

ABSTRACT

It seems as if people start losing control as they become easily upset, frustrated, and overwhelmed, having problems in resting and quieting their mind, and also feeling bad about themselves, lonely, worthless, and depressed, and avoiding others. If they have experienced the above symptoms, then there is a chance that they are suffering from mental stress. They have to take proper care of their mental health. Stress can be taken care of if it is properly handled and for that detection of stress or the mental state is necessary to provide proper care. The first step in stress detection is sentiment analysis of the users' daily conversations. The authors have proposed an NLP model and have trained it to produce a score for the input ranging between 0 and 1 where 0 is the negative end and 1 is the positive end. The trained model can predict the scores with an accuracy of above 92% on Twitter.

DOI: 10.4018/978-1-6684-8531-6.ch013

1. INTRODUCTION

Over the most recent twenty years, analysts have understood that there is a significant connection between the actual soundness of every person's enthusiastic state. This has prompted expanding interest in emotional registering (AC) which utilizes innovation to perceive the full of feeling condition of an individual. Dr. Rosalind Picard of the Massachusetts Institute of Technology (MIT) distributed the primary book on full of feeling processing. Since that, In the domain of human- computer interaction, it has become a major branch. It detects an individual's present emotion by analyzing their physiological and bodily expressions. Joy, anger, surprise, contempt, sorrow, and fear are some of the most common fundamental emotional states inferred by affective computing. It is a creating issue and it has transformed into an inevitable piece of our standard schedules. The early acknowledgment will lessen the mischief it expenses and hold it back from being progressing. The harms of weight on human well-being have been known by scientists and a critical number of endeavors have made as of late to foster a programmed pressure estimating framework by utilizing shrewd gadgets and progressed AC algorithms. The construction of the input vector space from the existing document vector space is a part of the Sentiment Analysis process. Vector space mapping can be achieved in one of two ways. Because feature extraction is done by applying statistical measures directly, machine learning- based or statistical-based feature extraction methods are widely used. The most usually utilized philosophy for identifying Feelings from text is Naive Bayes and LSTMs. These techniques relatively have exceptionally high precision than another strategy. However, these techniques have higher exactness which will more often than non- fizzle sometimes like mocking comments as the custom customary Long transient memory produced for the first is an experimentation practice and it is difficult to tune the hyper boundaries to get the higher precision, accuracy, affectability, and explicitness. The generally utilized many AI calculations like Help Vector Machines require colossal computational time for learning. The more words that are available altogether in each sentence or expression, the more equivocal the word in the center becomes. BERT represents the expanded significance by perusing bidirectionally, representing the impact of any remaining words in a sentence on the center word, and taking out the left-to-right force that predispositions words towards specific importance as the sentence progress.

2. RELATED WORK

L. Zhao et al., (2021) In his study a model named Augmented Education (N = 156) is led, which totals multisource social information spreading over on the web and disconnected learning as well as exercises inside and outside the homeroom. Metrics assessing linear and nonlinear behavioural changes, in particular, can be used to acquire a deeper understanding of the characteristics that lead to outstanding or poor performance. of campus lifestyles are assessed; also, characteristics that characterise dynamic Long short-term memory is used to extract changes in temporal lifestyle patterns (LSTM). Next, a classification technique based onmachine learning is being developed to predict academic success. Finally, visible feedback is being developed to help students (particularly at-risk students) improve their relationships with the university and achieve a better accuracy. Experiments show that the Augment ED model may accurately predict students' academic records.