

Informatics Institute of Technology
In Collaboration With
University of Westminster, UK



University of Westminster, Coat of Arms

Ajourn,
An Anxiety Detection and Management System

A Dissertation by
Mr. Maneesha Walisundera
w1761775 / 2018124

Supervised by
Ms. Divya Premanantha

May 2023

Submitted in partial fulfilment of the requirements for the
BSc (Hons) Computer Science degree at the University of Westminster

ABSTRACT

Anxiety is a prevalent mental health issue that affects a significant portion of the global population. Identifying the type of anxiety, a person is suffering from through text can be challenging, which requires an accurate and efficient solution. Since people experience anxiety in different ways, there are issues with the tone and the possibility of misinterpretation of the individual's experiences when using written text to detect anxiety. Understanding the subtle differences, the context in which it is used, as well as the person's experiences and emotions, is necessary to distinguish between various forms of anxiety through text. Furthermore, it can be challenging to categorize different forms of anxiety through text with high confidence because the differences between them might be difficult to isolate and occasionally overlap.

To address this issue the author proposes a novel multi-class deep learning model using a LSTM architecture for detecting multiple types of anxiety from text, which uses sentiment analysis as a feature for the model to differentiate between these subtle nuances between the different types of anxiety.

The author has achieved success in providing the domain with two models, the first being a multi-class deep learning model and the second multi-class deep learning model with sentiment as a feature. The author shows the difference in performance between these models and highlights the differences and applicability of these models. The first model has achieved an accuracy of 0.75, precision of 0.60, recall of 0.86 and f1-score of 0.71. The second model has achieved an accuracy of 0.77, precision of 0.94, recall of 0.78, and f1-score of 0.85.

Keywords: Anxiety, Mental Health, Multi-class deep learning, Sentiment Analysis, Machine Learning, Data Science, Text Analysis

ACM Subject Descriptors

1. Computing methodologies >> Machine learning >> Machine learning approaches >> Neural networks
2. Computing methodologies >> Artificial intelligence >> Natural language processing >> Information extraction
3. Applied computing >> Life and medical sciences >> Health Informatics