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Predictive Tool for Peer Support and Mental Health Improvement with Speech Emotion State Classification for University Students

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Abstract

Mental health is an important factor to be considered in the present. Many university students face mental issues and challenges in their academic years due to the workload which they carry out. These mental health issues include stress, depression, anxiety and trauma which affects in day-to-day life of students and as well as their future career.

There are many online mental health interventions including self-help application has been developed to improve mental health of victims, but most of these applications are based on therapy via online video calls. Therefore, the effectiveness of these applications is very low and it will not cater the need of improving the mental state of university students. Recently it has been discovered the effectiveness of mental health peer support, it is considered as an effective technique to treat mild conditions of mental health issues such as stress, depression and anxiety.

This dissertation is intended to propose and develop a web-based application with a deep learning predictive tool to automatically predict human emotions from speech by using mental health peer support approach to improve the mental health of university students. The prediction model is developed using Convolutional Neural Networks (CNN) algorithm which is trained based on RAVDESS and TESS speech datasets and evaluated with general deep learning classification metrices.

The system is capable of automatically predicting 8 main human emotions of students after the online peer support session ends. And according to the evaluation of domain experts the solution adds value to the mental health domain.

Keywords: deep learning, convolutional neural networks, mental health improvement, peer support, speech emotion classification