Research Theme: Biomedical Data Science/Drug Discovery/Machine learning/Computational Biology

MSc Research Project Title: Developing novel AI features for predicting mental health status from audio/visual cues

Principal Investigator/Supervisor: Wilson Goh

Co-supervisor/ Collaborator(s) (if any): Jimmy Lee

Project Description

a) Background:

The rapidly changing facet of society has imposed strain and pressures amongst young people. This can lead to mental illness, which in turn, imposes social and economic challenges. While therapeutic practices e.g. mindfulness training as implemented in New Zealand, can alleviate these issues, a data-centric approach towards early detection and achieving mechanistic understanding, is desirable.

Mental illnesses have risen rapidly in the rankings from 13 in 1990 to 7 in 2017 as a leading cause of DALYS (Disability-adjusted Life Years). About 75% of mental illnesses have their onset before age 25 and continue to afflict suffering over a prolonged period, causing chronic disability. Mental illnesses rank the second leading cause of years lived with disability (YLD). A young person may be diagnosed as Ultra-High Risk (UHR) for development of mental illness, based on a complex panel of behavioural traits.

b) Proposed work:

We hypothesize early-stage patients may manifest changes in mental states, particularly involving emotions and communications. We have earlier developed powerful sentiment analysis (SA) features for academic performance prediction in NTU experiential learning programme, with the reasoning that it is variance, not averages, that are meaningful towards sentiment profiling. We would like to investigate if this is also true in mental state profiling. If our SA features are information-rich, we will extend the model to predict a host of outcomes, including moods, anxiety, neurocognition and mental functioning.

We would like to expand our feature set, and capture and integrate more meaningful information, based on tonality and physical/facial expressions.

c) Preferred skills:

Strong technical skills in machine learning and feature engineering. Experience in mental health modelling is highly desired.

Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator:

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SBS contact and how to apply:

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