2024 Summer Research Project

Project title:	Depression biomarkers identified using machine learning
Project duration, hours of engagement & delivery mode	Duration of the project: 6 weeks Hours of engagement: 36hrs per week Applicant will be required on-site for the project.
Description:	Major depressive disorder is a leading cause of disability worldwide and identification of reproducible biomarkers for the illness continues to challenge researchers. Depression typically develops during adolescence, making this a critical time to investigate changes indicative of onset of depression. The project aims to establish biomarkers from behavioural and imaging data using machine learning approaches. The data for this study is available through an open data repository including healthy volunteers and adolescents diagnosed with depression.
Expected outcomes and deliverables:	The primary expected outcome of this project is identification of an appropriate machine learning model, its implementation, and assessment of how well the model can predict the onset of depression. Findings from the research may eventually be presented at a conference, and/or published as part of a manuscript. The student will be expected to implement methods, analyse their data, and present their work as a written report and oral presentation.
Suitable for:	This project is open to applications from students with a background in machine learning and computer vision or pattern recognition. Experience in programming is essential for this project. Participants should be familiar with Python syntax, data structures, and common libraries used for data preparation, such as Pandas and NumPy. Prior exposure to popular deep learning frameworks (TensorFlow or Pytorch) would be helpful.
Primary Supervisor:	Associate Prof Viktor Vegh
Further info:	Please contact Rajat Vashistha (r.vashistha@uq.edu.au) from the Centre for Advanced Imaging (AIBN, UQ) if you would like to discuss this project in detail and whether you meet project requirements.