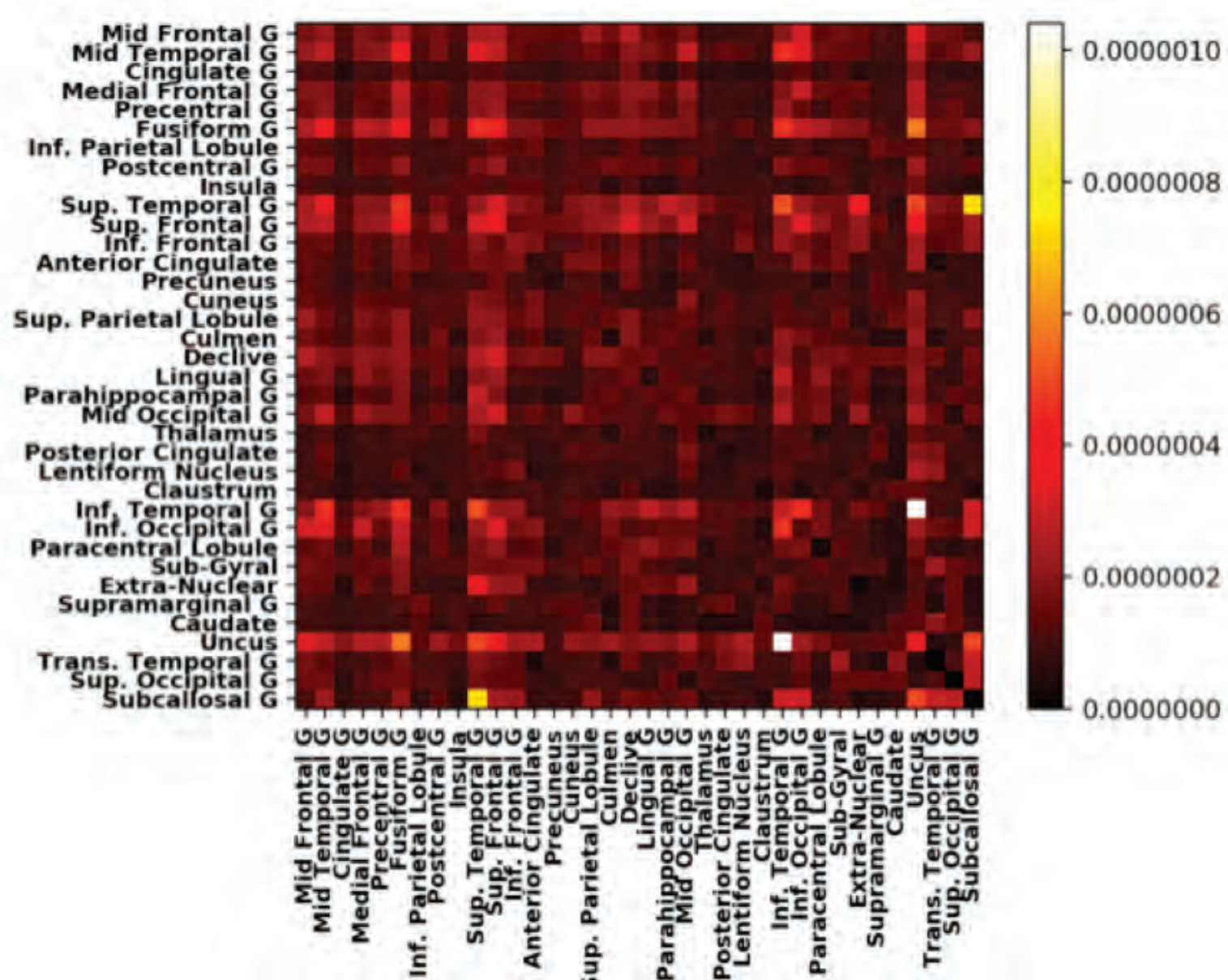
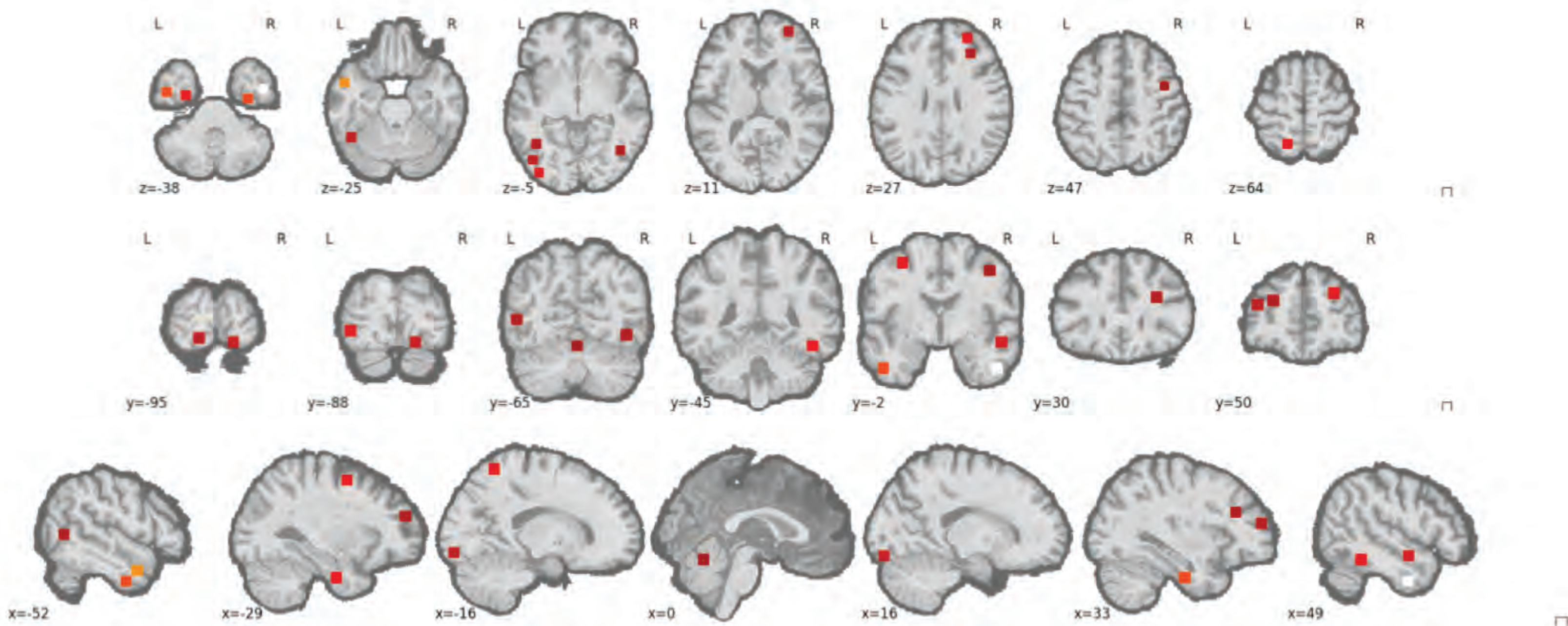


Decoding Human Brain Activations by Deep Learning

Student: Lee Yuh Ling

Supervisor: Dr Jagath C. Rajapakse

- **Alzheimer's Disease (AD)** is a progressive neurodegenerative disease in which the afflicted experiences a decline in memory and cognition
- **Mild Cognitive Impairment (MCI)** is generally seen as a sign of early-stage AD
- The complexity of AD results in a **misdiagnosis rate of 20-30%**
- Highlights the need for a more effective system to improve diagnostic accuracy
- Using functional magnetic resonance imaging (fMRI) data as input to a feedforward neural network model, an **accuracy of 76.3%** was achieved when classifying AD/CN subjects



- Importance score of the brain's regions of interest (ROI) were extracted using various **model interpretability** algorithms (Integrated Gradients, DeepLift, GradientShap)
- ROIs such as the **hippocampal gyrus**, **inferior temporal gyrus** and the **uncus** were deemed important identifying features of AD