ADiag: Graph Theory and Deep Learning Based Diagnosis of Alzheimer's Disease

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Alzheimer’s Disease (AD) is the most widespread neurodegenerative disease, affecting over 50 million people across the world. While its progression cannot be stopped, early and accurate diagnostic testing can drastically improve quality of life in patients. Currently, only qualitative means of testing are employed in the form of scoring performance on a battery of cognitive tests. The inherent disadvantage of this method is that the burden of an accurate diagnosis falls on the clinician’s competence. Quantitative methods like MRI scan assessment are inaccurate at best, due to the elusive nature of visually observable changes in the brain. In lieu of these disadvantages to extant methods of AD diagnosis, we have developed ADiag, a novel quantitative method to diagnose AD through graph theory and deep learning based analysis of large graphs based on thickness differences between different structural regions of the cortex. ADiag is adept not only at differentiating between controls and AD patients, but also at predicting progression of Mild Cognitive Impairment (MCI) to clinical AD.

Awards Won:

Fourth Award of $500