INTERIM REPORT

# VARDAAN SHARMA

# S1882216

### GOALS

The goal of the project is to create a protein-protein interaction network from synaptic proteins found in Alzheimer’s disease proteomes, analyze the network, and compare it to a network of synaptic proteins identified from healthy synaptic proteomes.

### SO FAR

Data collection and base network creation.

Up till now, the proteins that were identified in 9 papers were extracted, and combined. This list was then mapped to their entrez ids for uniformity. The protein interactions of these proteins were identified from a list of known protein-protein interactions from Database.

Preliminary network analysis.

The PPI network that was analyzed using the R package igraph. The largest connected component of the network was identified and used as the main network.

Preliminary network properties: degrees, betweenness, closeness, scale free network was found in the analysis.

### FUTURE WORK

Clustering and Enrichment

The CDMSuite package will be used for clustering of the network. The different available clustering algorithms( Geodesic and Random Walk edge betweenness, Spectral Modularity ) in the package will be used and an algorithm will be chosen based on the cluster properties such as number of components etc. This clustered network will be be enriched using the same package.

Comparison

The clustered and enriched network will then be compared to the healthy synaptic network. This will be done manually. Factors such as placement of differentially expressed proteins in enriched clusters will be looked at.