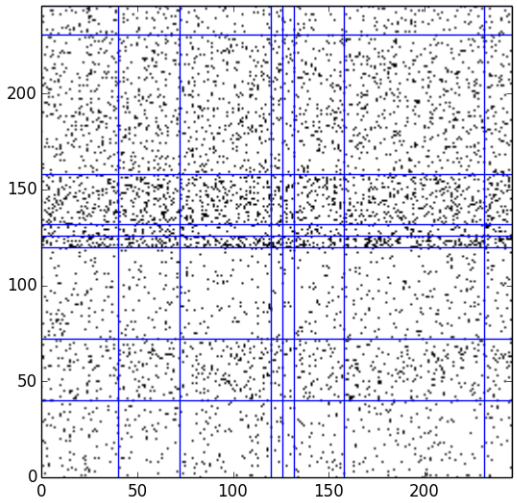
EN.580.694: Statistical Connectomics
Final Project Report

Michael Norris · May 14, 2015

Title



Opportunity Graph Models allow us to generate similar graphs from a smaller amount of parameters. If we can model connectomes well, then a good model allows us to generate similar connectomes to perform statistical analysis on similar graphs. The paper by Pavlovic [1] used the Erdos Reyni mixture model as an approximation of the C. Elegans connectome. Using other graph models to perform the same analysis will aid future researchers in selecting tools for connectomics work.

Challenge

Action The Random Dot Product Graph Model (RDPG) represents each node by a random vector, and assigns the probability of edges between nodes to be the dot product between the two vectors [2].

Here, we use a variant of RDPG, the Random Dot Product Mixture Model, where we assign

Resolution

Future Work

References

[1] Dragana M. Pavlovic, Petra E. Vrtes, Edward T. Bullmore, William R. Schafer, and Thomas E. Nichols. Stochastic blockmodeling of the modules and core of the ¡italic¿caenorhabditis elegans¡/italic¿ connectome. *PLoS ONE*, 9(7):e97584, 07 2014.

[2] StephenJ. Young and EdwardR. Scheinerman. Random dot product graph models for social networks. In Anthony Bonato and FanR.K. Chung, editors, *Algorithms and Models for the Web-Graph*, volume 4863 of *Lecture Notes in Computer Science*, pages 138–149. Springer Berlin Heidelberg, 2007.