

Project Summary

Alex Mueller

Washington University in St. Louis

Mentor: Cris Moore

My project relates to the "small-world phenomenon" in social networks. Earlier work in this area by Jon Kleinberg demonstrated that if a social network is represented by a grid, with any node joined to its immediate neighbors and a fixed number of more distant nodes, under certain conditions optimally short paths could be found across the grid using only local information. In particular, this optimal routing speed occurs if any two nodes are joined with a probability power-law distributed, with the exponent of the power law dependent on the dimension of the network grid. I am attempting to find simple algorithms for re-writing links on the grid that produce this optimal distribution. If such a simple algorithm for making networks optimally navigable existed, it could help explain the frequency with which the small world phenomenon is observed in real social networks.