Community Detection in Congressional Cosponsorship Networks

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Objective: This project aims to study the use of community detection algorithms on the Congressional cosponsorship network. The US Congress can be considered to be made of two groups, corresponding with the two political parties. We want to investigate if community detection algorithms can correctly identify these groups. It has also been contended that Congress has grown more partisan in the past decade. We would like to determine if the ties between the groups have become significantly weaker through time. Finally, we would like to use the dataset to identify particularly connected nodes to see with what degree they correspond with influential or senior members of congress.

Basic Approach: To answer these questions we will either be using James Fowler's cosponship dataset and/or the dataset from the Congressional Bills Project. Using Python and networkX, we will test the Girvan-Newman algorithm and hierarchical clustering against the political parties of the congressional members. Then using a variety of tests, including the strength of community connecting edges, we will explore if the separation between the two parties has grown larger in recent years. Finally we will look at betweenness, degree, and closeness centrality measures to measure how closely they match up with influential members of congress.

References

[1] Connecting the Congress: A Study of Cosponsorship Networks
James H. Fowler

[2] Legislative Cosponsorship Networks in the U.S. House and Senate
James H. Fowler

[3] Fowler's cosponsorship dataset
http://jhfowler.ucsd.edu/cosponsorship.htm

[4] Congressional Bills Project
http://congressionalbills.org/about.html