Senior Project Proposal

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Objective

For my project I’m redesigning a previous program I wrote that analyses voting profiles of single winner elections and checks the likelihood of the Condorcet Winner (a candidate that wins in a head to head match against every other opponent) to lose using the Borda Count, First Past the Poll, Vote for k, and Runoff systems of voting. The profiles can be any dimension like a 4 candidates by 16 preference table or 5 candidates by 4 preference table. It also generates profiles to test given estimated weights.

For the redesign I’m planning on using Python because I almost no experience with the language and it’s becoming more widely used at every level of the industry. I’m planning on consolidating the generator and analyzer into a single program. The previous program was limited to every permutation of 8 candidates, I’m hoping to find a way to add more. I also plan on adding a GUI that helps organize the results, and more voting methods to test, including multi winner elections.

Features

GUI elements that allow the user to search for a specific table, and view the results of that particular table or groups of tables with common outcomes. Also have an easy way to give specific weights to profiles when generating a table. When analyzing the table, check if the Condorcet looser wins. Add more voting system with a single winner, like Coombs Rule, Negative Voting, Approval Voting, and Cumulative Voting. And add a way to check voting systems with multiple winners like, Majority Electoral Systems, Proportional Representation, Single Transferable Vote, and Multi winner ranked choice voting.

Grading

All previous parts of the program working in python (20 points)

(4 points) Borda Count

(4 points) First past the Poll

(4 points) Vote for k

(4 points) Runoff voting system

(4 points) Vote generation system (both weighted and non-weighted)

GUI working with all functionality (10 points)

(5 points) Search results

(5 points) Include/exclude selected tests

Other single winners (12 points)

(3 points) Coombs Rule (majority run off)

(3 points) Negative Voting (flip the votes)

(3 points) Approval Voting (choose any number of candidates)

(3 points) Cumulative Voting (give as many votes as candidates)

Detect other ways to have non-ideal outcome (2 points)

Condorcet loser wins (2 points)

Multi winner (10 points)

(2 points) Majority Electoral Systems

(2 points) Proportional Representation

(2 points) Borda Count (again)

(2 points) Single Transferable Vote

(2 points) Multi winner ranked choice voting.

Total points 54

Grade Scale

A -> 54 - 50 points

B -> 49 - 44 points

C -> 43 - 38 points

D -> 37 - 34 points