



## Multiplayer Gerrymandering

Gerrymandering is the practice of manipulating borders of electoral districts to create an advantage for a political party or candidate. It is a hot social topic as old as representative democracy, with more than 200 years of history, and a notably long [Wikipedia article](#).

When done to ensure someone wins an election, gerrymandering inevitably leads to seemingly unfair results, funny-looking districts (see figure), and an overarching feeling of dissatisfaction with democracy.

Methods of dealing with gerrymandering are many and varied, from restrictions on permitted district shapes to mandating that minority groups cannot be split.

One particular idea is to carry out the district-drawing process with involvement from all the (political or otherwise) parties with something at stake. In political science, some examples of such processes are given by Maxwell, Schneer and DeLuca [2] and by Landau, Reid and Yershov [1].

Your job will be to make (and perhaps break) similar procedures - to discover and prove their positive (and negative) properties. We will meet weekly to discuss progress, your ideas and next steps.

**Requirements:** Strong motivation, ability to work independently and interest in conducting exciting theoretical research. Good mathematical background (ability to write valid proofs). Background and/or interest in any of combinatorics/graphs/algorithms is a big plus, and coding skills may be of some use. Creativity and coming up with your own ideas is highly appreciated. An interest in politics will help.

**Interested? Please contact me for more details!** Tell me a bit about yourself, your interests and your background.

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## References

- [1] Z. LANDAU, O. REID, AND I. YERSHOV, *A fair division solution to the problem of redistricting*, *Social Choice and Welfare*, 32 (2009), pp. 479–492.
- [2] M. PALMER, B. SCHNEER, AND K. DELUCA, *A partisan solution to partisan gerrymandering: The define–combine procedure*, *Political Analysis*, 32 (2024), p. 295–310.



“DISCO THESIS” written with (real) districts