

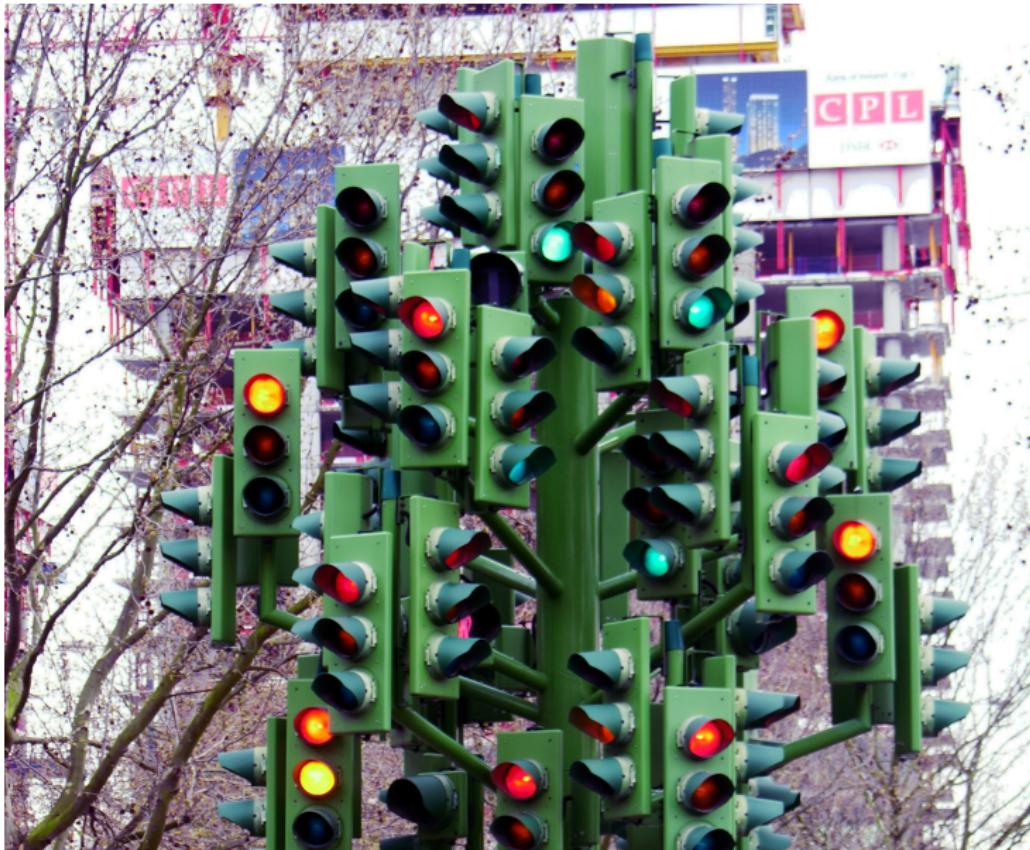
Introduction to Computational Science

Optimizing Traffic Lights in Urban Street Grids

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Introduction



The problem

- analyse different traffic light solutions
- "American city" grid
- uniform traffic

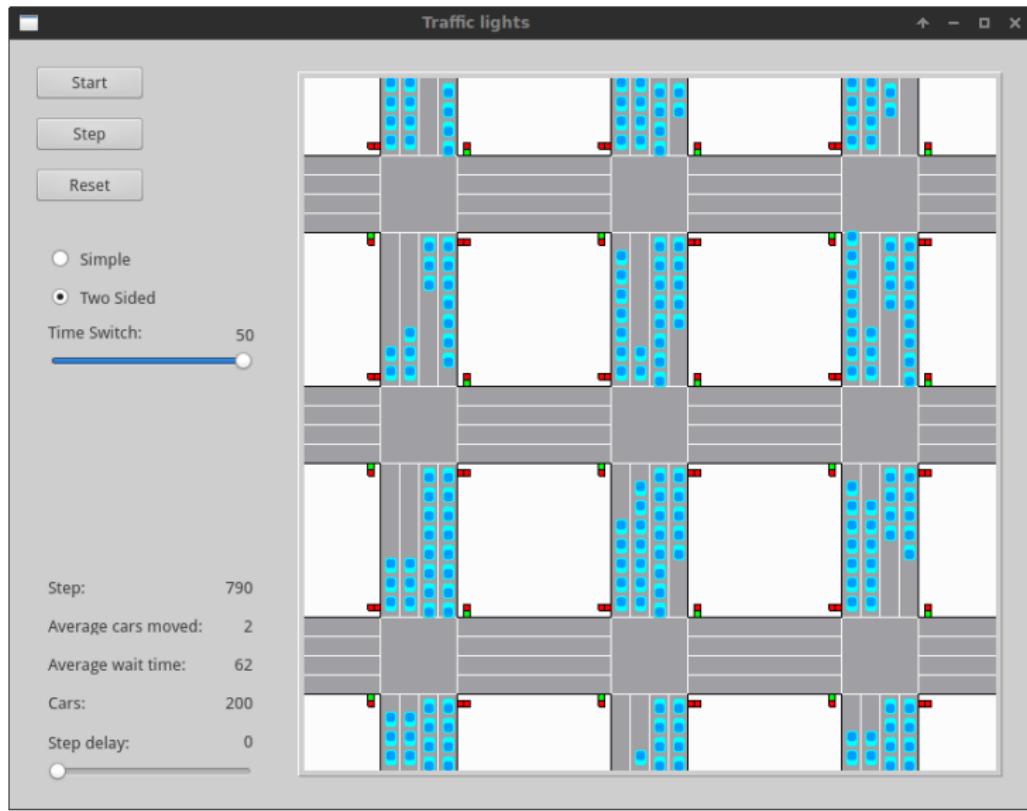
Method overview

- 9 intersection
- wrapped boundaries
- different traffic light heuristics
- gather data

Intersection design

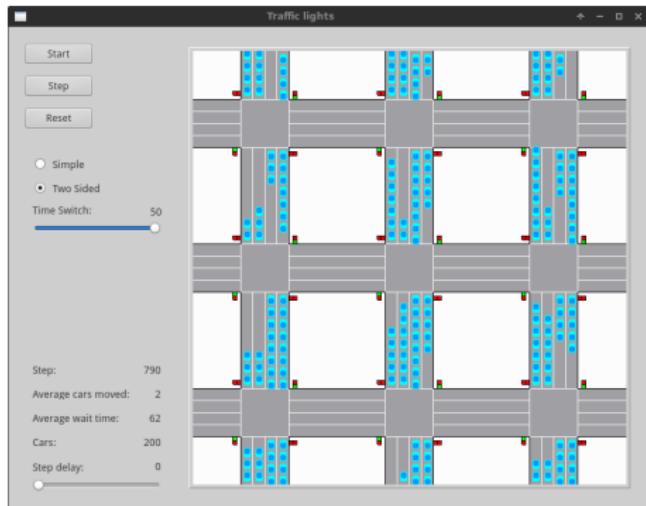
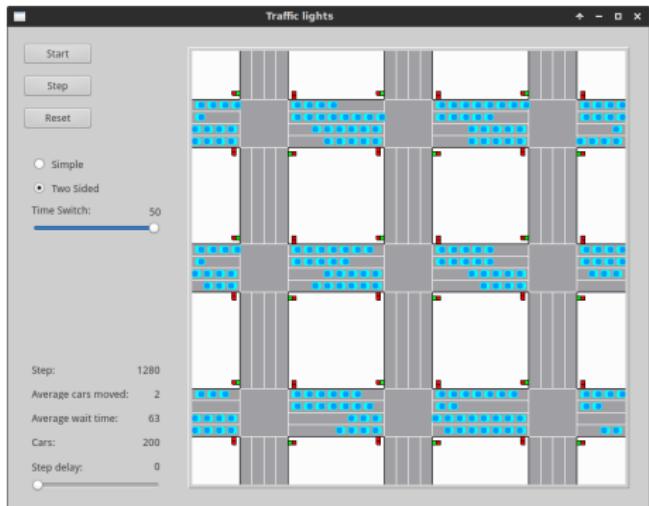
Statistics gathering

Demo



Results: pattern

- A pattern emerged with long switch timings on the two sided algorithm
- It would alternate between two states with 1 switch step of chaos



Results: mean car waiting time

Definition: cars that cannot move to the next field, either to a red traffic light or another car. Averaged over all lanes.

Measured using 200 cars simulating 5000 steps.

algorithm/switch time	1	4	8	16	32
simple	6	8	13	23	48
two sided	6	7	8	18	39

Results: cars moved per intersection per step

Definition:

Measured using 200 cars simulating 5000 steps.

algorithm/switch time	1	4	8	16	32
simple	14	12	9	6	3
two sided	13	12	12	7	4

Conclusion

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