

Opinion dynamics in social networks

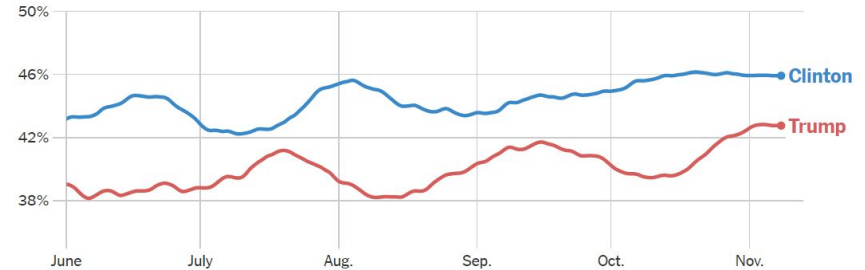
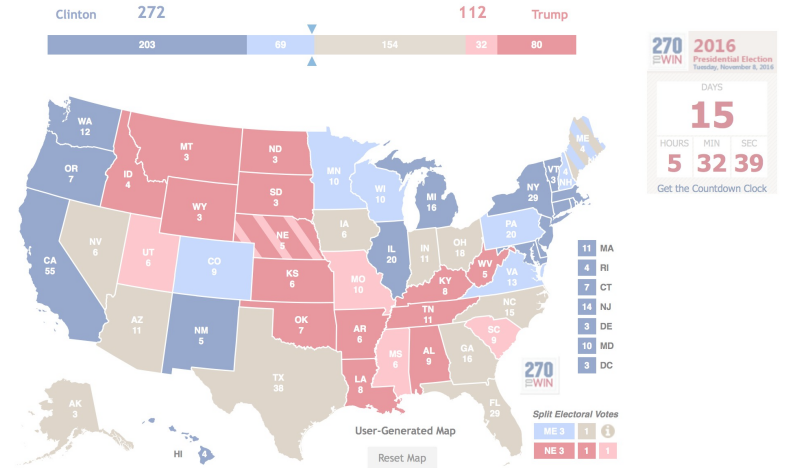
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Outline

- Motivation
- The Model
- Construction of the grid and Network
 - The Grid
 - The Network
- Experiments
- Simulation
- Results and discussion
- Summary

Motivation

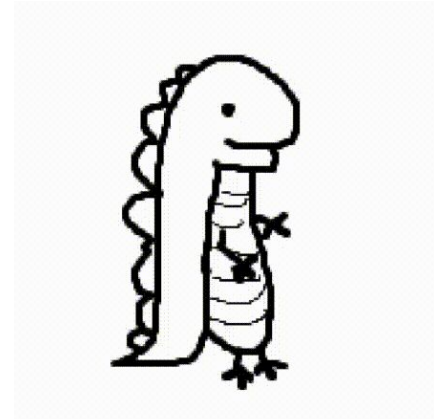
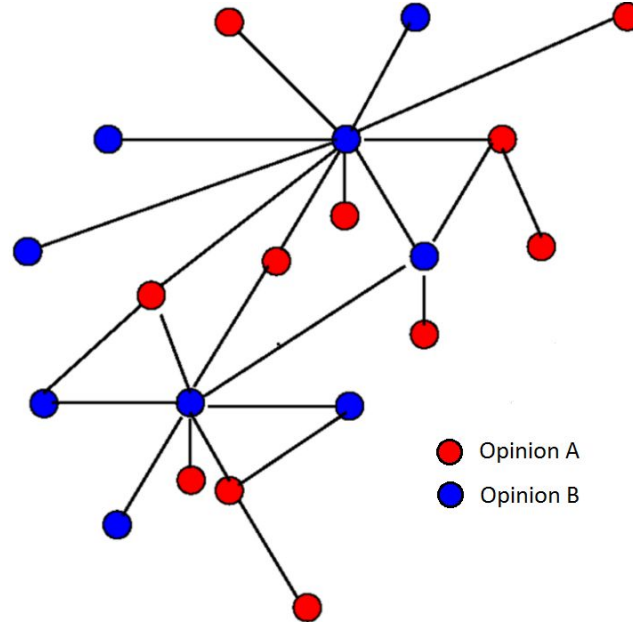
- US elections
- Strategy for maximum support
 - Social interactions
 - Buy agents
 - > targeted vs. untargeted



Source: The New York Times

The Model

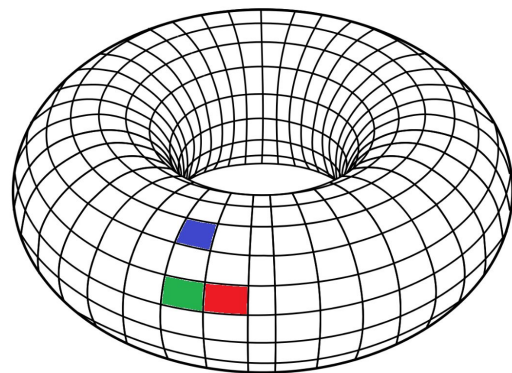
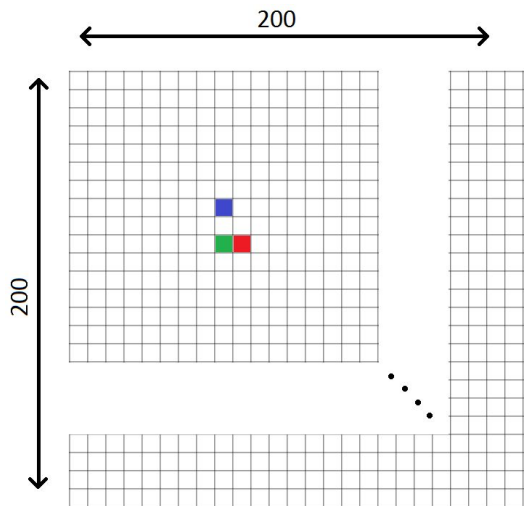
- Voter Model
- Cellular Automaton
- Stubborn agents
- Non-stubborn agents



Construction of the grid and network

The Grid

- 200x200
- Grid with boundaries
- Toroidal shape

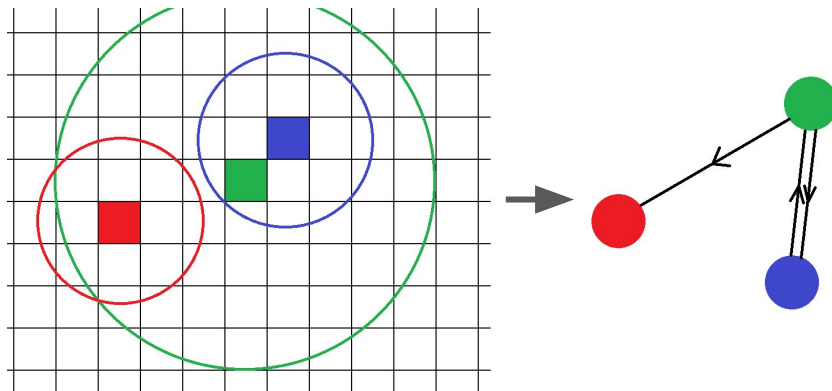


A torus, toroidal shape

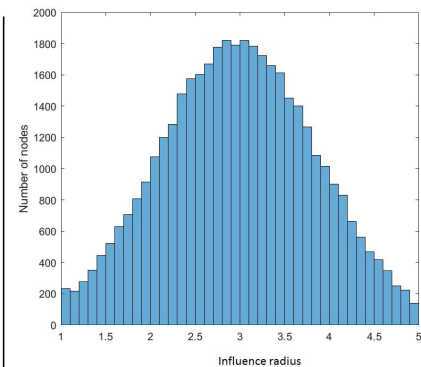
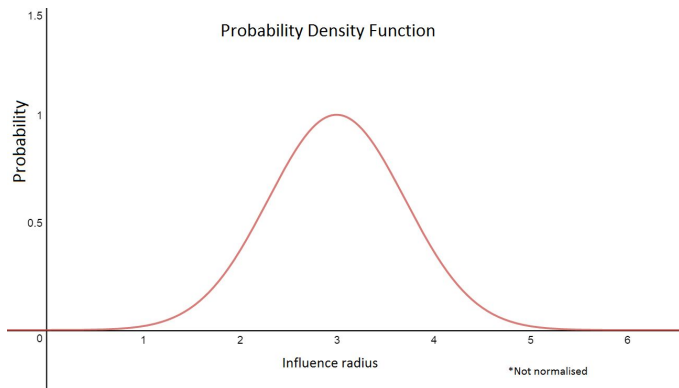
The Network

- Influence radius

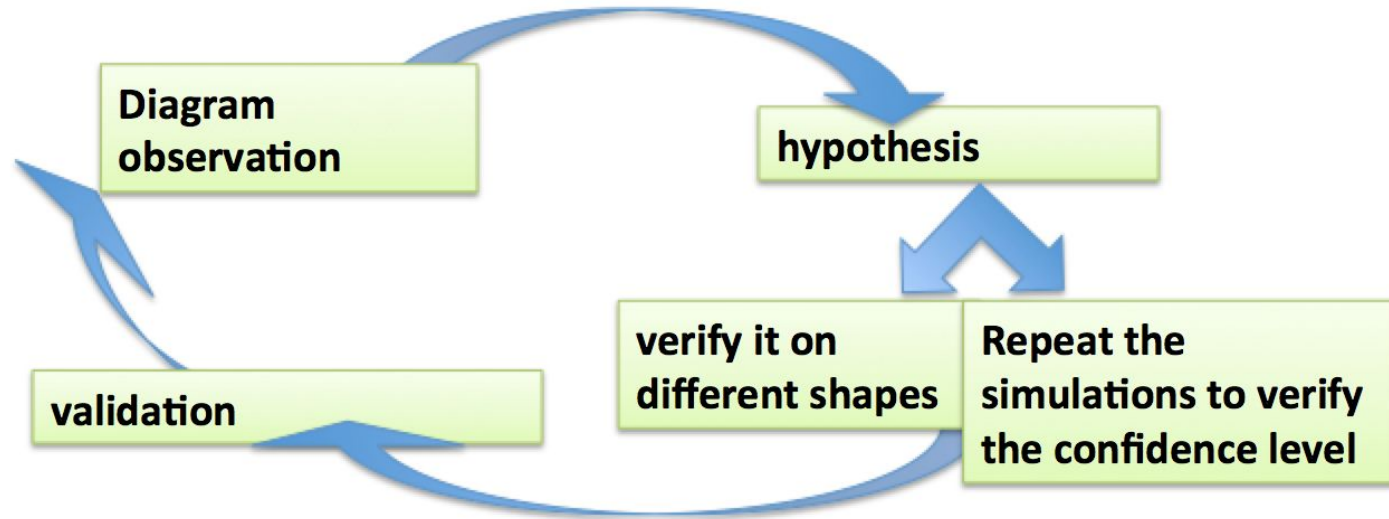
- Directed graph



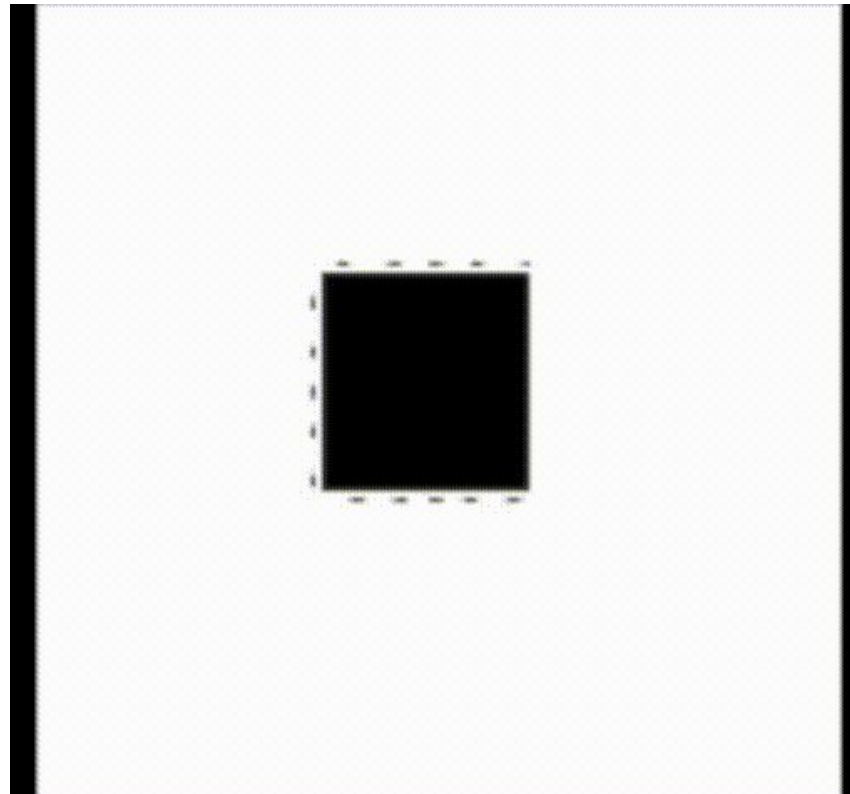
- Probability Density Function



Experiments



Square with and without stubborn agents



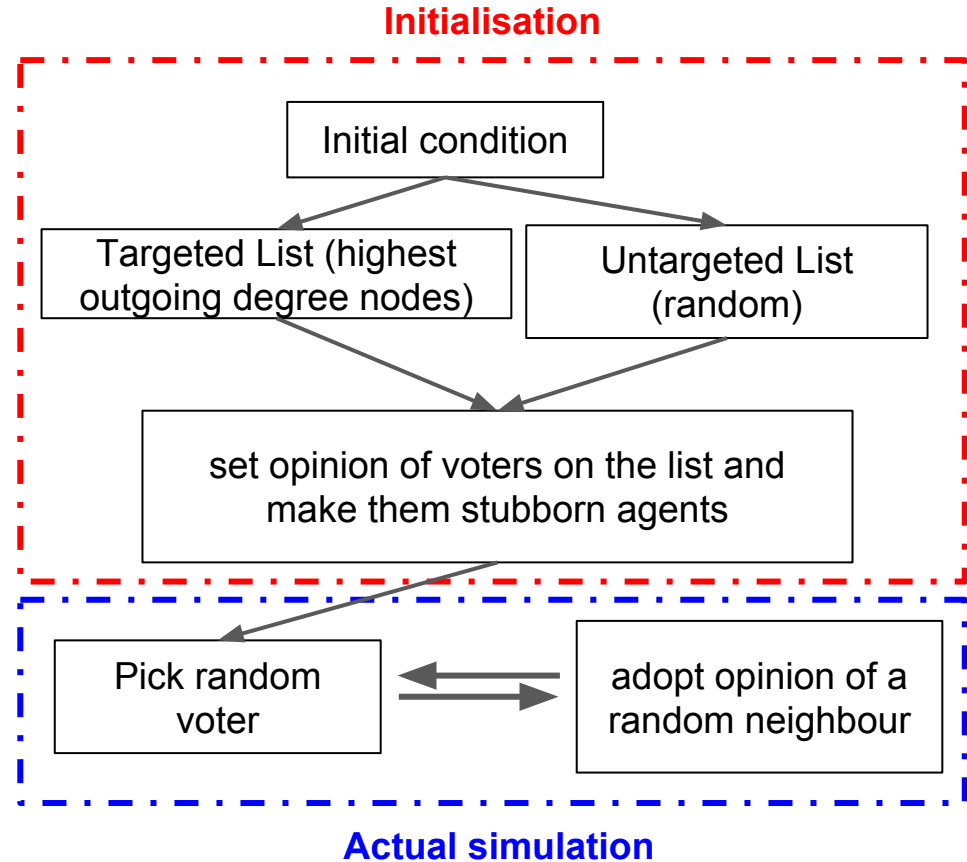
Simulation

Strategy 1

- Targeted approach
(Buy most influential voters)

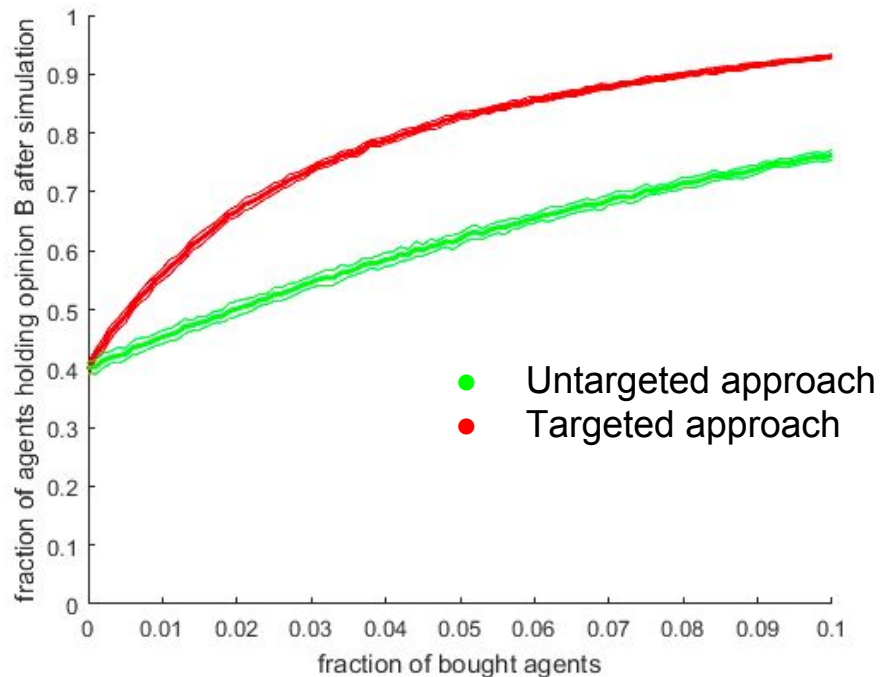
Strategy 2

- Untargeted approach
(Buy random voters)

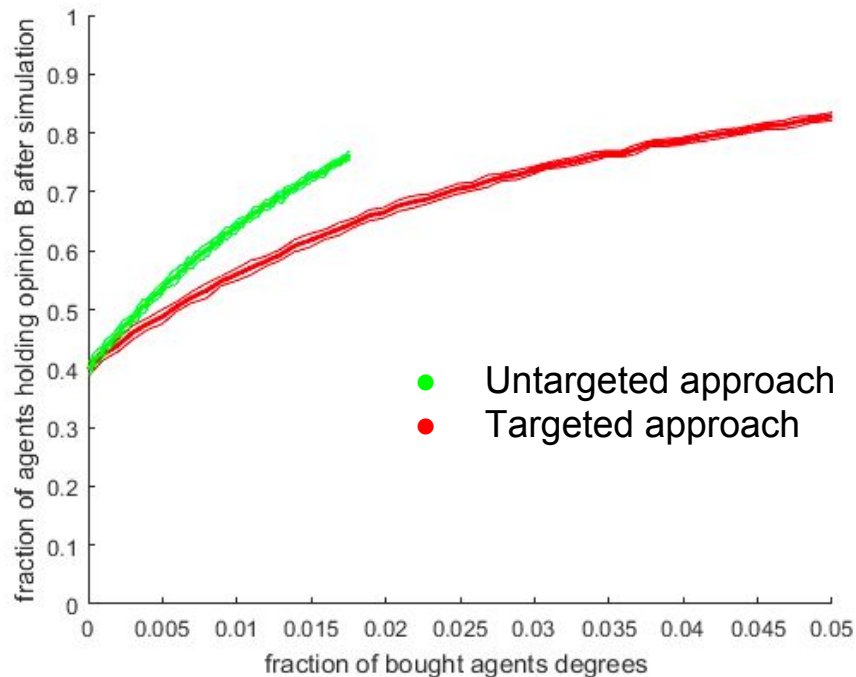


Results and discussion

Result compared to the number of bought voters

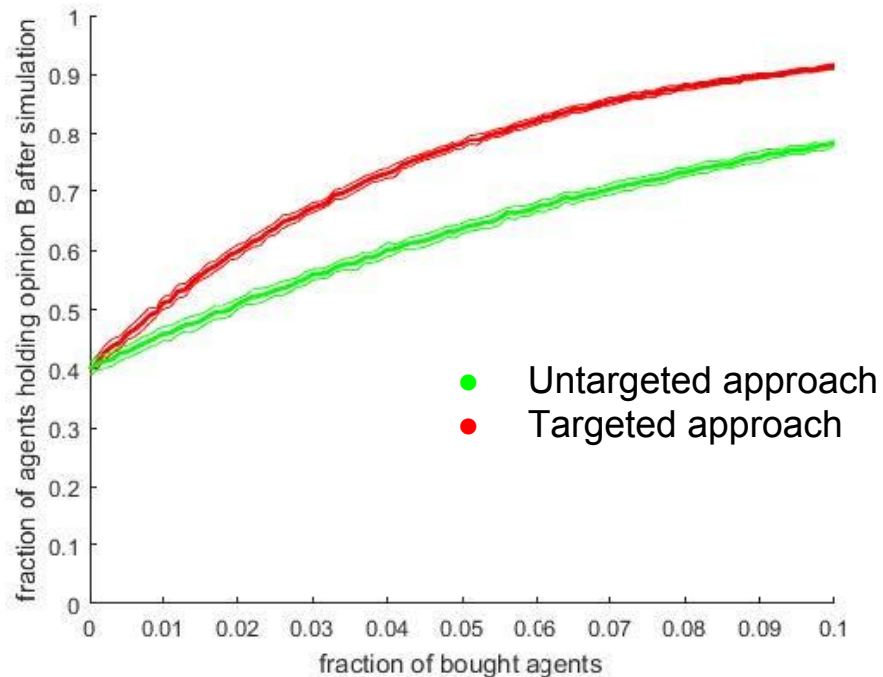


Result compared to the degree sum of bought voters

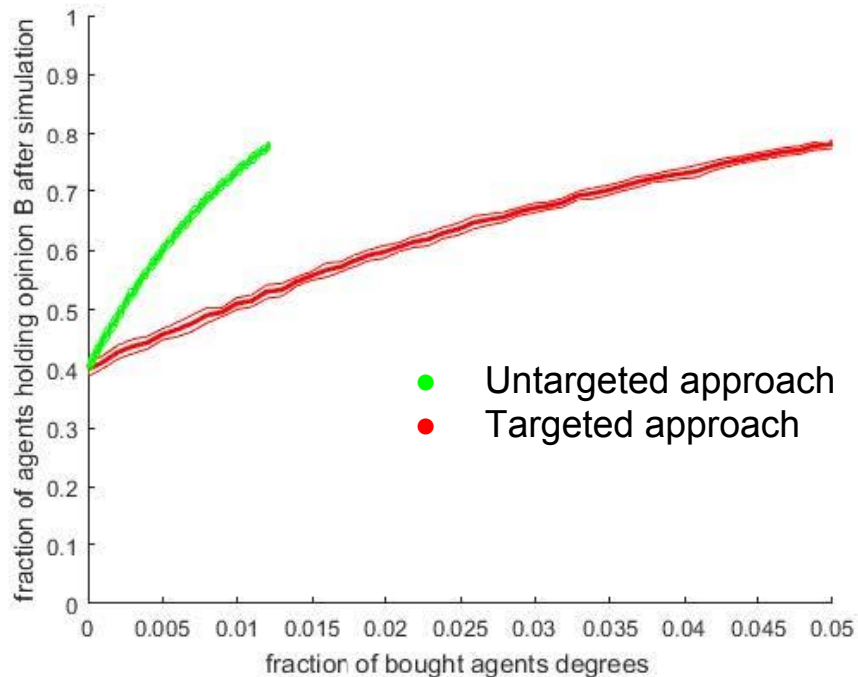


Results and discussion

Result compared to the number of bought voters



Result compared to the degree sum of bought voters



Conclusion

- We used a Voter model in Matlab to simulate our two strategies.
- Very Influential people influence the most the opinion dynamics
- The targeted approach yields better results than the untargeted.
- BUT with a linear cost-to- influence ratio, a presidential candidate would be served better by not targeting the most influential voters.

References

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Questions?

