Bidirectional Quadratic Voting

Leveraging Issue-Based Matching

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About Me

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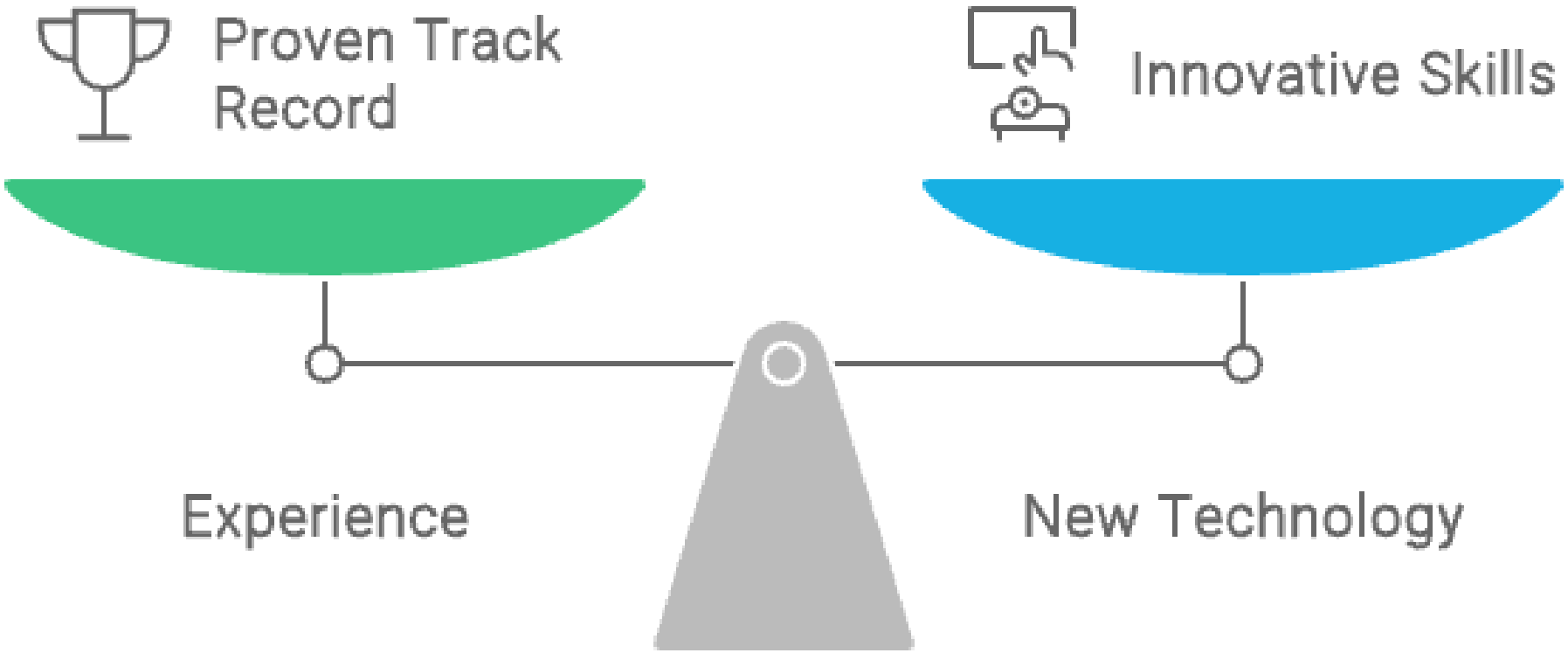
Disclaimer

This presentation does not represent the views of my affiliated organization, nor does it reflect my personal political opinions.

Challenge: The Voting Dilemma (1/2)

Balancing experience with innovation in candidate selection.



Challenge: The Voting Dilemma (2/2)

- Focusing on past achievements might hinder recognition of new ideas
- Prioritizing the latter may inadvertently favor opposing candidates in reality

Quadratic Voting (QV)

- QV as a potential solution
- Allows voters to express distributed preferences
- Not limited to choosing a single candidate

Vote pricing example

Number of votes	"Vote credit" cost
1	1
2	4
3	9
4	16
5	25

Applying QV to Elections

Candidates 1-5

QV

Vote pricing example

Number of votes	"Vote credit" cost
1	1
2	4
3	9
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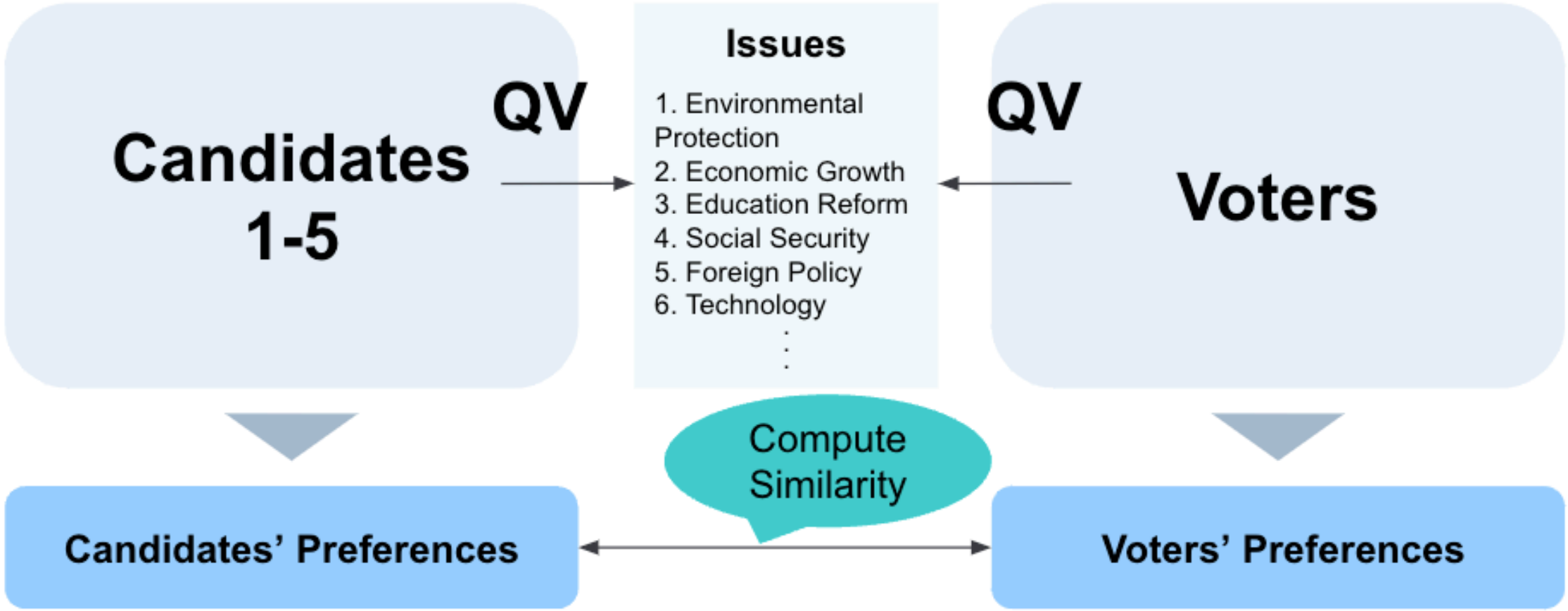
Voters

The candidate with the highest score wins.

Taking It a Step Further

- QV in elections still leaves voters uncertain about candidates' true preferences
- Need for a voting method aligning voters and candidates on specific issues

Bidirectional Quadratic Voting (BQV)

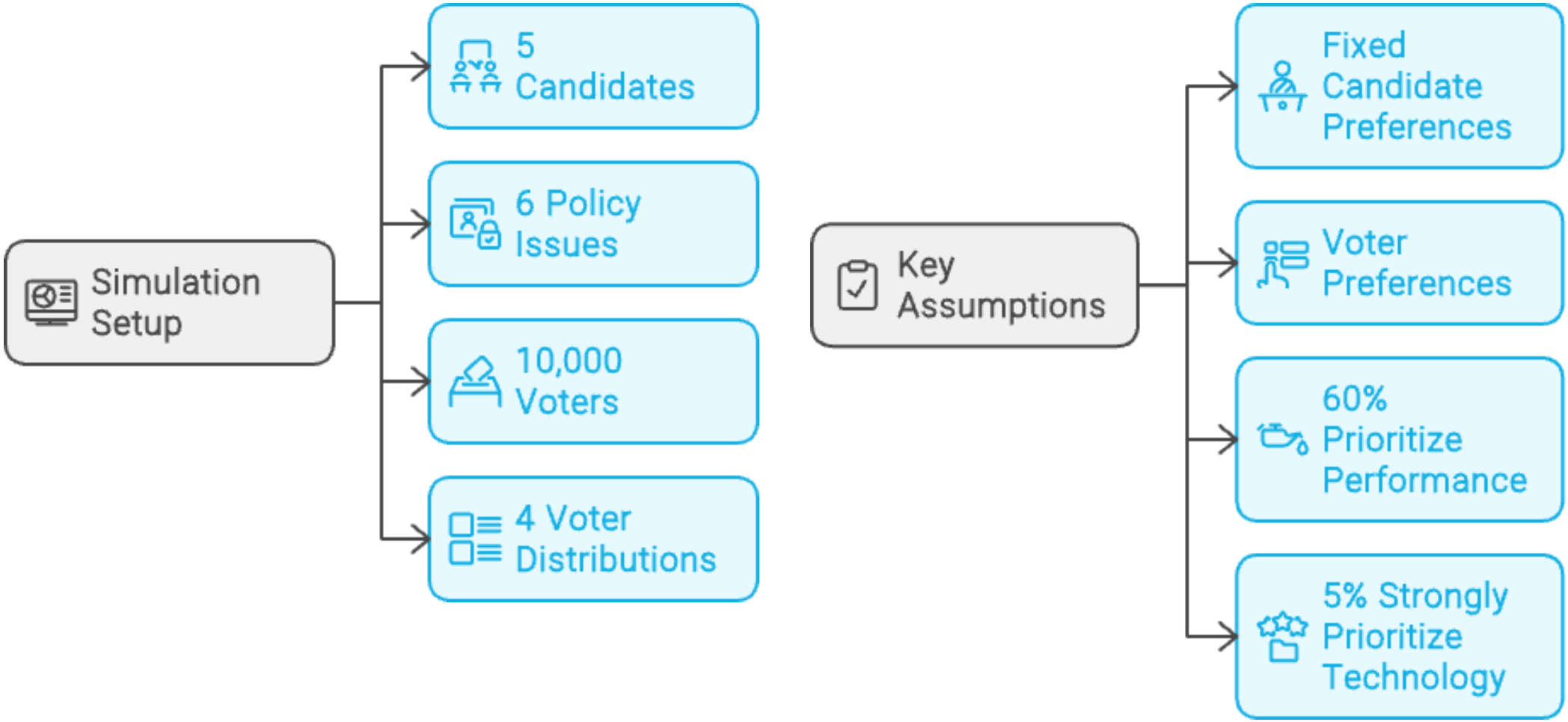


Based on the match calculations between each candidate and the voters, the candidate with the highest match wins.

Key Features of BQV

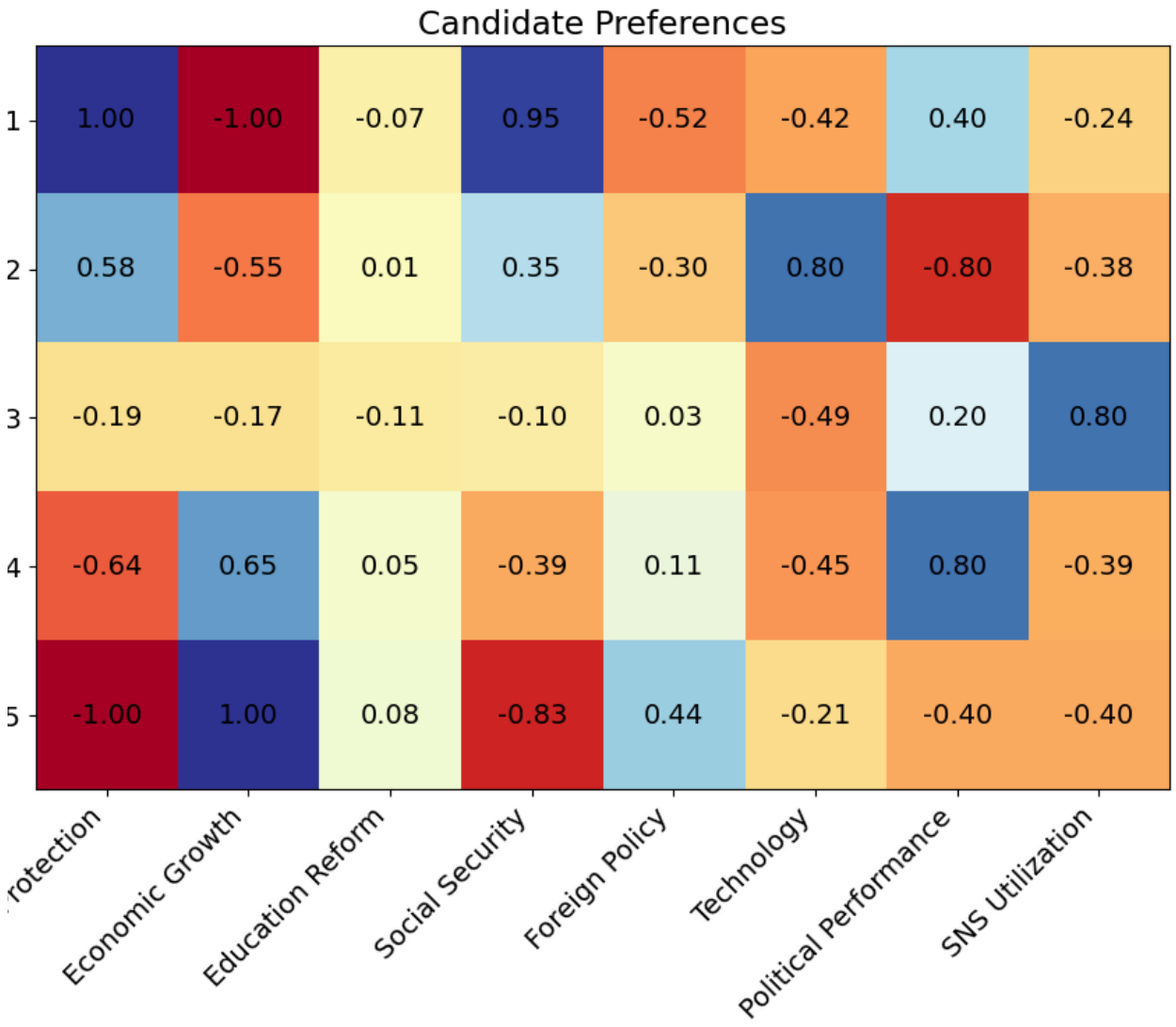
- BQV resembles a matching app mechanism
- Unlike 1:N matching in dating apps, BQV facilitates N:M matching
- As a voting system, it needs to be comprehensible (though still complex)

Simulation Setup



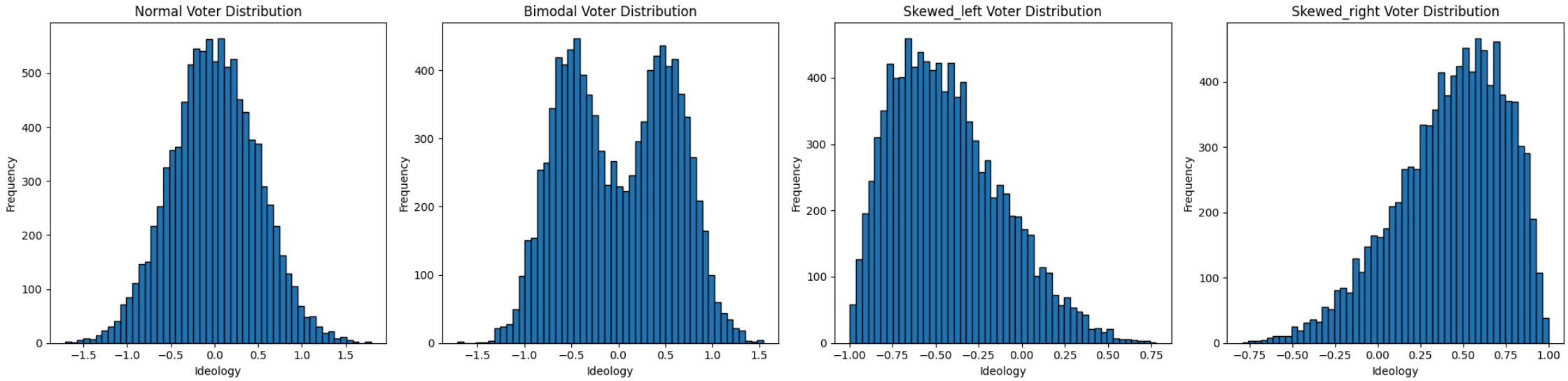
Candidate Preferences

- Candidates span political spectrum
- Candidates 1 and 4: relatively high political experience
- Candidate 2: tech expert

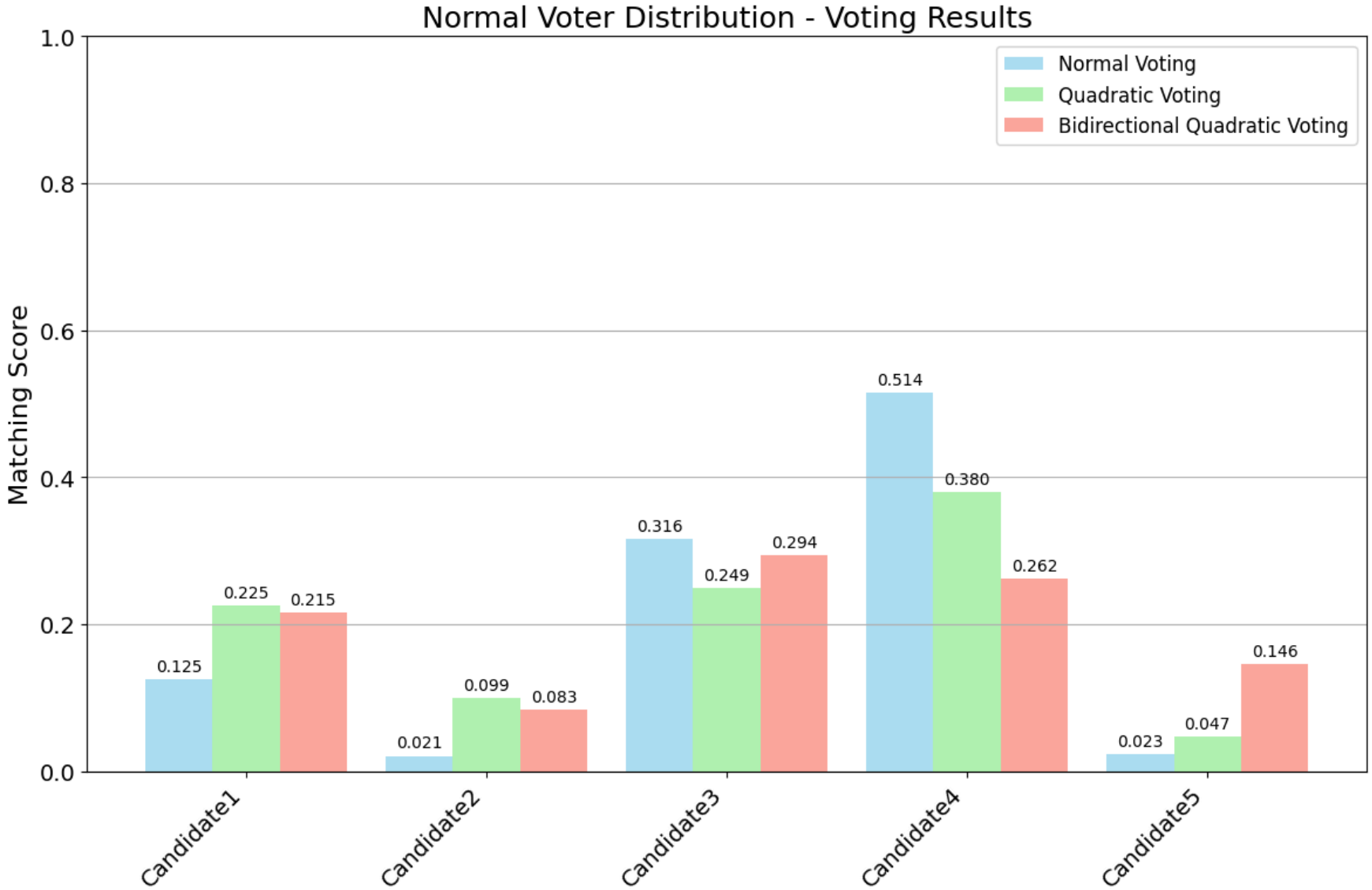


Voter Distribution

- Four voter distributions assumed: normal, bimodal, left-skewed, and right-skewed
- Simulations conducted for each distribution



Simulation Results (1/2)



Simulation Results (2/2)

- QV/BQV reflects more balanced preferences compared to regular voting (*1)
- More precise modeling is needed for more accurate simulations
- For complete simulation details, please refer to my GitHub repository (*2)

*1: Only results for normal distribution shown

*2: https://github.com/kentaro/bidirectional-quadratic-voting

Conclusion

- QV/BQV is a promising mechanism for social implementation on Ethereum
- GMO aims to collaborate with the Ethereum community to create positive social impact
- Together, we can leverage blockchain technology to build a better world!