The effect of differential quality and differential zealotry in the best-of-$n$ problem

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Collective Decision Making: Taxonomy

Collective Decision Making

Task Allocation
- Continuous
- Discreet

Consensus Achievement

Best-of-\(n\) Problem

Collective Decision Making:
Best-of-\(n\) Problem

Collective Decision Making: Focus on Quality

Looking for Maximum Quality with Positive Feedback Modulation

Dissemination Mode
Differential quality vs differential zealotry

**Swarm**
Voting for new nest
A or B

**Normal Agent**
Can change opinion

**Zealot**
Never change opinion
Differential quality vs differential zealotry

What if there are more zealots promoting option with lower quality? Will option with lower quality wins over option with better quality?
Differential quality vs differential zealotry: Steps

A

B

Swarm
Voting for new nest
A or B
Swarm Robots Simulation
Results
Conclusions

• the quality of an option is more influential than the quantity of the zealots
• the swarm tends to choose the right option even when zealots for the low quality options are five times more numerous
• Results are not much affected by the swarm size \( N \) or by the proportion of zealots pitching for option with lower quality \( (\sigma B) \).
• Future studies include working with higher number of options \( n \) and adding mathematical model.
Thank you!

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