

A Two-stage Mechanism for Prioritized Trajectory Planning in Multi-Agent Systems

Yu-Wen Chen, Can Kizilkale, Murat Arcak

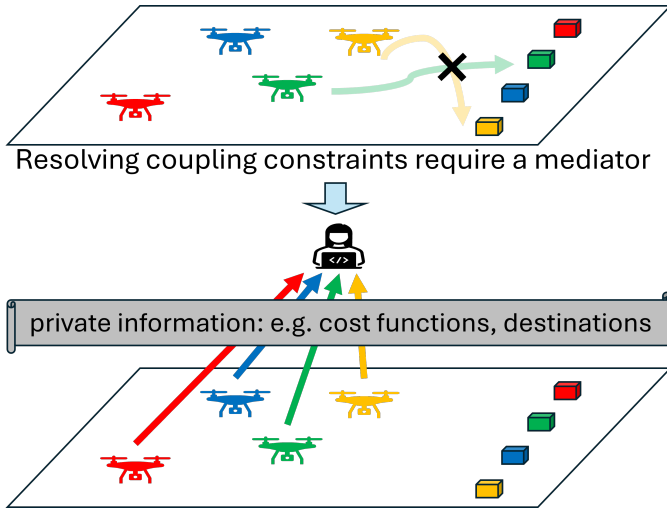
Department of Electrical Engineering and Computer Sciences
UC Berkeley

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Motivation: will agents report truthfully?



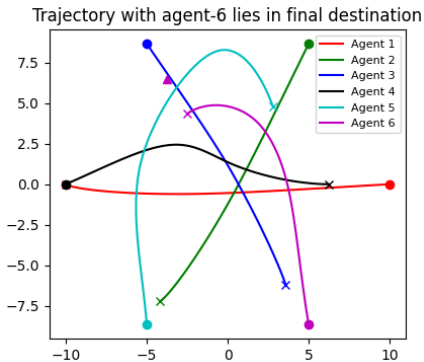
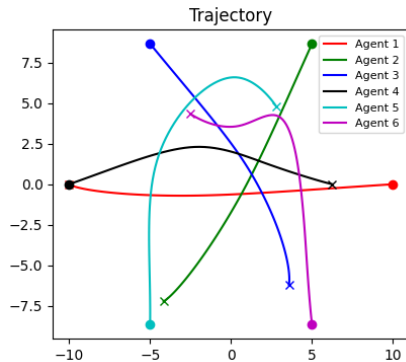
Settings:

- Agents report (possibly false) information to the mediator.
- Then, the mediator provides suggestions to the agents.
- Finally, agents determine their execution trajectories.

Agents may benefit from lies

- Scenarios:

- (Left) truthful destination; (Right) false destination



⇒ Design a monetary mechanism to motivate agents to report truthfully.

Main takeaways

- Vickrey-Clarke-Groves (VCG) mechanism motivates truthfully reporting but is not applicable here.
- We propose a two-stage mechanism to incentivize truthful reports where agents have local decision-making power.
- We extend this mechanism to prevent the manipulation of priority weightings in prioritized planning.



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