Privacy and Truthful Equilibrium Selection for Aggregative Games

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November 20, 2014 - NEGT

Joint work with: Michael Kearns, Aaron Roth and Zhiwei Steven Wu (Penn)

Aggregative games

- Succinct representation of players' actions
- Can summarize n-dim action profile with a d-dim vector, for $d \ll n$

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Generalizes:
- Weighted congestion games
- Anonymous games
- ...

Equilibrium selection via direct revelation

Introduce a "weak" mediator:

1. Players report their types
2. Mediator computes equilibrium on reported types
3. Mediator suggests each player picks the action they played in that equilibrium
4. Players pick actions

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Mediator is "weak" because players can...

- opt-out
- misreport their types
- pick action other than the suggested action

Our (truthful) mechanism

- Player truthfully report types
- Mediator computes *optimal* Nash equilibrium of the complete information game
- Players faithfully follow suggested actions
- Actions form *optimal* ex post Nash equilibrium of the original incomplete information game

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Use privacy as a tool to achieve truthfulness

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