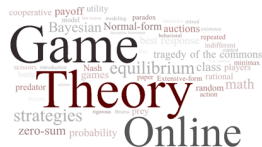




Data: Professional Sports and Mixed Strategies

Game Theory Course:
Jackson, Leyton-Brown & Shoham



Mixed Strategies



- Some counter-intuitive features...
- Do people really play them?

Professional Soccer - Penalty Kicks



- Ignacio Palacios-Heurta (2003) “Professionals Play Minimax”
Review of Economic Studies, Volume 70, pp 395-415
- 1417 Penalty kicks from FIFA games: Spain, England, Italy...
- Ignacio considers left, center, or right choices, and considered which leg the kicker used; I will keep it down to left and right choices (his page 402) ignoring kicker's leg.

Soccer Penalty Kicks



<i>Kicker/Goalie</i>	<i>Left</i>	<i>Right</i>
<i>Left</i>	.58, .42	.95, .05
<i>Right</i>	.93, .07	.70, .30

Game Theory

cooperative payoff utility added common modeling paradoxes Bayesian Normal-form auctions science repeated tragedy of the commons Nash equilibrium class rational mathematics predator strategies zero-sum probability Online random action paper Extensive-form game theory evolution

- [illegible]

Soccer Penalty Kicks



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[illegible]

-
- A word cloud featuring various terms related to game theory and online interactions. The most prominent words are "Game Theory" and "Online". Other significant words include "Bayesian Normal-form auctions", "Nash equilibria", "class projects", "rational action", "predator", "strategies", "zero-sum probability", "cooperative payoff utility", "added common modeling", "paradoxes", "repeated", "tragedy of the commons", "outcome", "selfishness", "social dilemmas", "behavioral", "past experience", "outcomes", "actions", "conditions", "timing", "paper Extensive-form rational", "random", "math", "replicator dynamics PDFT", and "equilibrium".

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[illegible]

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- ### Data: Professional Sports and Mixed Strategies

Game Theory

Online

Equilibrium

Nash

Bayesian

Normal-form

Auctions

Class

Rational

Math

Action

Random

Paper

Extensive-form

Predictor

Strategies

Zero-sum

Probability

Agencies

Theory

Tragedy

Of the commons

Repeated

Indifferent

Paradox

Predictive

General

Social

Processes

Working

Utility

Relative

Payoff

KS

- [illegible]

-
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- Rational
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[illegible]

-
- Game Theory Online
- equilibrium
- Bayesian Normal-form auctions
- strategies zero-sum probability
- predator Nash equilibria class rational math action
- repeated tragedy of the commons
- paradox utility payoff creative KS
- schelling cooperation game theory online

Summary - Mixed Strategies - Soccer Penalty Kicks



- Some games have mixed strategy equilibria
- A players must be indifferent between the actions he or she randomizes over
- Interesting comparative statics
- Do see randomization:
 - in (professional) sports,
 - in nature: which way a squirrel runs to get out of your way),
 - in society and business interactions: audits by tax authorities!