

DENIZALP GOKTAS

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Providence, RI

RESEARCH INTERESTS

My research aims to devise and/or analyze multiagent learning algorithms in games and markets, with the ultimate goal of building welfare-improving technology based on these algorithms.

EDUCATION

Brown University <i>Ph.D. in Computer Science</i> <i>Thesis: An Algorithmic Theory of General Equilibrium</i>	Providence, RI July 2024
Brown University <i>M.S. in Computer Science; GPA: 3.85/4.00</i> <i>Thesis: Tâtonnement in Homothetic Fisher Markets</i>	Providence, RI May 2023
Columbia University <i>B.A. in Computer Science-Statistics, Magna Cum Laude; GPA: 3.80/4.00</i>	New York, NY May 2019
Paris Institute of Political Studies <i>B.A. in Political Science-Economics, Magna Cum Laude; GPA: 4.00/4.00</i>	Paris, France May 2019

EXPERIENCE

Cornell Tech <i>Postdoctoral Researcher</i> <ul style="list-style-type: none">◦ Applied Economic Forecasting: Working on applications of economic forecasting on real-world challenges.	New York City, NY Sep. 2024 - Now
JP Morgan & Co. <i>Research Scientist Intern</i> <ul style="list-style-type: none">◦ Economics and Multiagent Reinforcement Learning: Working on inverse reinforcement learning problems in games and incomplete markets.	New York City, NY Jun. 2023 - Sept 2023
Google DeepMind <i>Research Scientist Intern</i> <ul style="list-style-type: none">◦ Economics and Deep Learning: Led and published research at the intersection of AI and Economics.	London, United Kingdom Aug. 2022 - Dec. 2022
Simons Institute, University of California, Berkeley <i>Visting Scholar</i> <ul style="list-style-type: none">◦ Visiting scholar under Peter Bartlett: Participated in research seminars and gave a talk on convex-concave min-max Stackelberg games as part of the Learning in Games workshop.	Berkeley, California Jan. 2022 - May. 2022
Carnegie Mellon University <i>Research Assistant</i> <ul style="list-style-type: none">◦ Computational Mathematics: Used the Blaze C++ library to create a proprietary pseudo-inverse routine.◦ Object-Oriented Programming: Designed classes and routines using OOP for an agent-based simulation.◦ Visualization: Created R scripts using ggplot2 and the Tidyverse packages to analyze output data.	May. 2019 - Sep. 2020
Columbia University <i>Research Assistant</i> <ul style="list-style-type: none">◦ Mathematical Modeling: Developed the mathematical model used in the agent-based simulation.◦ Algorithm Creation: Invented a many-to-many matching algorithm and proved its mathematical properties.	New York, NY Jan. 2018 - May 2019
DNB Markets <i>Investment Banking Summer Analyst</i> <ul style="list-style-type: none">◦ Automation: Coded VBA scripts reducing the time needed to create a bond cross-holders list by ~95%.◦ Data Aggregation: Created an automated transaction dashboard template for healthcare IPOs.	New York, NY Jun. 2018 - Aug. 2018
Hikma Pharmaceuticals <i>Mergers & Acquisitions Summer Analyst</i> <ul style="list-style-type: none">◦ Automation: Automated data querying for risk models using python scripts.	Amman, Jordan Jun. 2017 - Aug. 2017

TEACHING EXPERIENCE

Algorithmic Game Theory

Teaching Assistant

Brown, RI, USA

Spring 2021

CONFERENCE PROCEEDINGS

- Randolph, J., **Goktas**, D., & Greenwald, A. (2024). Banzhaf power in hierarchical games. *Proceedings of the International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS'24)*.
- Goktas**, D., Greenwald, A., Zhao, S., Koppel, A., & Ganesh, S. (2024). Efficient inverse multiagent learning. *The Twelfth International Conference on Learning Representations*.
- Goktas**, D., Greenwald, A., Zhao, S., Koppel, A., & Ganesh, S. (2023). Generative adversarial inverse multiagent learning. *The Twelfth International Conference on Learning Representations*.
- Goktas**, D., Prakash, A., & Greenwald, A. (2023). Convex-concave zero-sum markov stackelberg games. *Proceedings of the Conference on Neural Information Processing Systems (NeurIPS'23)*.
- Goktas**, D., Zhao, J., & Greenwald, A. (2023). Tâtonnement in homothetic fisher markets. *Proceedings of the 24th ACM Conference on Economics and Computation*, 760–781.
- Zhao, S., **Goktas**, D., & Greenwald, A. (2023). Fisher markets with social influence. *American Association for Artificial Intelligence Conference on Artificial Intelligence, AAAI'23*.
- Goktas**, D. (2022b). An algorithmic theory of markets and their application to decentralized markets. *American Association for Artificial Intelligence Conference on Artificial Intelligence, AAAI'22*.
- Goktas**, D., & Greenwald, A. (2022b). Robust no-regret learning in min-max Stackelberg games. *International Conference on Autonomous Agents and Multi-Agent Systems 2022, AAMAS'22*.
- Goktas**, D., Zhao, S., & Greenwald, A. (2022a). Exploitability minimization in games and beyond. *Neural Information Processing Systems 2022, NeurIPS'22*.
- Goktas**, D., Zhao, S., & Greenwald, A. (2022c). Zero-sum stochastic Stackelberg games. *Neural Information Processing Systems 2022, NeurIPS'22*.
- Goktas**, D., & Greenwald, A. (2021a). Convex-concave min-max Stackelberg games. *Neural Information Processing Systems 2021, NeurIPS'21*.
- Goktas**, D., Viqueira, E. A., & Greenwald, A. (2021a). A consumer-theoretic characterization of fisher market equilibria. *Conference on Web and Internet Economics, WINE'21*.

REFEREED WORKSHOP PAPERS

- Goktas**, D., Parkes, D. C., Gemp, I., Marris, L., Piliouras, G., Elie, R., Lever, G., & Tacchetti, A. (2023a). Generative adversarial equilibrium solvers. *Equilibrium Computation Workshop at the 24th ACM Conference on Economics and Computation (EC@EC'23)*.
- Goktas**, D., & Greenwald, A. (2022c). Robust no-regret learning in min-max Stackelberg games. *Adversarial Machine Learning and Beyond Workshop at the American Association for Artificial Intelligence Conference on Artificial Intelligence, AAAI'22*.
- Goktas**, D., Zhao, S., & Greenwald, A. (2022b). Zero-sum stochastic Stackelberg games. *Workshop on Gamification and Multiagent Solutions, ICLR'22*.
- Goktas**, D., & Greenwald, A. (2021b). Gradient descent ascent in min-max Stackelberg games. *Games, Agents, and Incentives Workshop at International Conference on Autonomous Agents and Multi-Agent Systems 2022, AAMAS'22*.
- Goldstein, S. C., **Goktas**, **Denizalp**, Conn, M., Pitchuka, S. P. T., Sameer, M., Shah, M., Colin Swett, H. T., Viswanathan, S., & Xiao, J. (2020). Bolt: Building on local trust to solve lending market failure. *Mechanism Design for Social Good, MD4SG'20*.

PRESENTATIONS AND POSTERS

- Goktas**, D., Parkes, D. C., Gemp, I., Marris, L., Piliouras, G., Elie, R., Lever, G., & Tacchetti, A. (2023b). Generative adversarial equilibrium solvers. *ACM Conference on Economics and Computation, Equilibrium Computation Workshop*.
- Goktas**, D., Parkes, D. C., Gemp, I., Marris, L., Piliouras, G., Elie, R., Lever, G., & Tacchetti, A. (2023c). Generative adversarial equilibrium solvers. *JP Morgan Sequential Decision Making Group*.

- Goktas, D.** (2022a). Algorithmic general equilibrium theory. *Economics for AI group, Google DeepMind.*
- Goktas, D.** (2022b). An algorithmic theory of markets and their application to decentralized markets. *American Association for Artificial Intelligence Conference on Artificial Intelligence, AAI'22.*
- Goktas, D.** (2022c). Stackelberg games and their applications to general equilibrium theory. *Oxford University Computer Science Seminar.*
- Goktas, D.** (2022d). Stackelberg games and their applications to general equilibrium theory. *London School of Economics, Mathematics Seminar.*
- Goktas, D., & Greenwald, A.** (2022a). Convex-concave min-max Stackelberg games. *Learning in Games Workshop, University of California, Berkeley.*
- Goktas, D.** (2021a). Min-max games with dependent strategy sets. *Brown Robotics Group.*
- Goktas, D.** (2021b). Network-theoretic market equilibrium models. *CUNY Philosophy and Logic Seminar.*
- Goktas, D.** (2021c). Tâtonnement beyond constant elasticity of substitution. *INFORMS 2021, Forthcoming.*
- Goktas, D.** (2021d). Tâtonnement beyond constant elasticity of substitution. *GAMES 2020.*
- Goktas, D.** (2020). Tâtonnement beyond constant elasticity of substitution. *Faculty Flash Talks Brown University.*
- Goktas, D., Greenwald, A., Zhao, S., Koppel, A., & Ganesh, S.** (2024). Efficient inverse multiagent learning. *The Twelfth International Conference on Learning Representations.*
- Zhao, S., Goktas, D., & Greenwald, A.** (2023). Fisher markets with social influence. *American Association for Artificial Intelligence Conference on Artificial Intelligence, AAI'23.*
- Goktas, D., Zhao, S., & Greenwald, A.** (2022a). Exploitability minimization in games and beyond. *Neural Information Processing Systems 2022, NeurIPS'22.*
- Goktas, D., Zhao, S., & Greenwald, A.** (2022c). Zero-sum stochastic Stackelberg games. *Neural Information Processing Systems 2022, NeurIPS'22.*
- Goktas, D., Viqueira, E. A., & Greenwald, A.** (2021b). Tâtonnement beyond constant elasticity of substitution. *Stony Brook International Conference on Game Theory.*
- Goktas, D., Viqueira, E. A., & Greenwald, A.** (2021c). Tâtonnement beyond constant elasticity of substitution. *Twenty-Second ACM Conference on Economics and Computation (EC 2021) Contributed Poster.*
- Goldstein, S. C., Goktas, Denizalp, Conn, M., Pitchuka, S. P. T., Sameer, M., Shah, M., Colin Swett, H. T., Viswanathan, S., & Xiao, J.** (2020). Bolt: Building on local trust to solve lending market failure. *Mechanism Design for Social Good, MD4SG'20.*

COMMUNITY SERVICE

HAPPIH

Co-founder and Co-director

Paris, France

Nov. 2017 - Jun. 2020

- Led an international gender equality campaign through the production and distribution of reusable sanitary pads.
- The campaign was endorsed by the government of Monaco and numerous local and international news outlets.
- **Grant Management:** Was awarded a grant of 10,000€ to execute a humanitarian aid project in Morocco.

ACADEMIC SERVICE

Workshop on Foundation Models, LLMs, and Game Theory

Co-Founder and Co-Organizer

2023 -

American Association for the Advancement of Artificial Intelligence (AAAI)

Main Track Program Committee Member

2024

Chaos: Interdisciplinary Journal of Nonlinear Science

Reviewer

2023

Conference and Workshop on Neural Information Processing Systems (NeurIPS)

Main Track Program Committee Member

2023

International Joint Conferences on Artificial Intelligence (IJCAI)

Main Track Program Committee Member

2023

International Joint Conferences on Artificial Intelligence (IJCAI)

Special Track on AI and Social Good Program Committee Member

2023

Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS)

Reviewer

2023

American Association for the Advancement of Artificial Intelligence (AAAI) <i>Main Track Program Committee Member, Session Chair</i>	2023
American Association for the Advancement of Artificial Intelligence (AAAI) <i>AI for Social Impact Track Program Committee Member, Session Chair</i>	2023
Gamification and Multiagent Solutions Workshop @ ICLR <i>Program Committee Member</i>	2022
Conference on Web, Internet, Economics and Networks (WINE) <i>Reviewer</i>	2021
Cooperative AI Workshop @ NeurIPS <i>Program Committee Member</i>	2021
Games, Agents, and Incentives Workshop (GAIW) @ AAMAS <i>Program Committee Member</i>	2021
Algorithmic Game Theory Research Group <i>Manager</i>	Brown, RI, USA Sept. 2020 - Present
Algorithmic Game Theory Reading Group <i>Organizer</i>	Brown, RI, USA Sept. 2020 - Present
Google ExploreCSR <i>Mentor</i>	Brown, RI, USA Spring 2021

AWARD AND HONORS

American Association for Artificial Intelligence Student Scholarship	Jan. 2023
JP Morgan AI Fellowship	Jan. 2022
Royce Graduate Fellowship	Oct. 2019
Columbia Honor Society	May. 2019
Pi Sigma Beta Honor Society	May. 2019
Jean Louis Dreyfus Scholar	May. 2017

OPEN SOURCE SOFTWARE

Competitive Equilibrium Solver <i>Python library to solve for the allocations and prices of a large class of Fisher markets</i> https://github.com/denizalp/fisher	Sep. 2020 - Present
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MENTORSHIP

Sadie Zhao <i>Headed for PhD in Computer Science at Harvard</i>	Graduating May 2023
Jack Ciabaton <i>Now at Jane Street</i>	Graduated May 2022
John Randolph <i>Now at Meta</i>	Graduated May 2022
Shray Mishra <i>Now at Weiss Asset Management</i>	Graduated May 2022
Jackson De Campos <i>Now at Netflix</i>	Graduated May 2022

SKILLS

Languages : French (fluent), Turkish (fluent), Spanish (advanced), Arabic (intermediate)
Programming : C++, CSS, CVXPY, ggplot2, Haiku, Html, Java, Jax, JaxOPT, Keras, NumPy, Pandas, Python, R, SciPy, SQL, Tensorflow, Tidyverse, VBA