

DENIZALP GOKTAS

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Providence, RI

RESEARCH INTERESTS

My research interests lie at the intersection of microeconomics and algorithms. I am interested in using tools from optimization and dynamical systems theory to 1) discover algorithmic processes that converge to equilibria and 2) apply these discoveries to build decentralized marketplaces that lead to fair and efficient outcomes. A list of past research and work can be found on my website.

EDUCATION

Brown University

Ph.D. in Computer Science

Providence, RI
May 2024 (Expected)

Brown University

M.S. in Computer Science GPA: 3.85/4.00

Thesis: *Tâtonnement Beyond Gross Substitutes*

Honors: Royce Graduate Fellow

Providence, RI
May 2021

Columbia University

B.A. in Computer Science-Statistics, Magna Cum Laude; GPA: 3.80/4.00

Honors: Political Science Honor Society, Columbia Honor Society, Jean Louis-Dreyfus Scholar

New York, NY
May 2019

Paris Institute of Political Studies

B.A. in Political Science-Economics, Magna Cum Laude; GPA: 4.00/4.00

Paris, France
May 2019

EXPERIENCE

Carnegie Mellon University

Research Assistant

May. 2019 - Sep. 2020

- **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.

Columbia University

Research Assistant

New York, NY
Jan. 2018 - May 2019

- **Software Engineering:** Coded an agent-based simulation using C++ (~50,000 lines coded alone).
- **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.

DNB Markets

Investment Banking Summer Analyst

New York, NY
Jun. 2018 - Aug. 2018

- **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.

Hikma Pharmaceuticals

Mergers & Acquisitions Summer Analyst

Amman, Jordan
Jun. 2017 - Aug. 2017

- **Automation:** Automated data querying for risk models using python scripts.

Columbia University, Office of Computing

AV Technician

New York, NY
Sep. 2017 - May 2019

- **Event Organization:** Monitored and managed academic conferences; met with event organizers to answer requests.

VOLUNTEER EXPERIENCE

HAPPIH (happih.fr)

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 10,000 euros grant to execute a humanitarian aid project in Morocco.

PUBLICATIONS

- Goldstein, S. C., Goktas, D., 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*.
- Goktas, D., & Greenwald, A. (2021a).** Gradient descent ascent in min-max stackelberg games [In Submission - AAAI'21].
- Goktas, D., & Greenwald, A. (2021b).** Min-max games with dependent strategy sets [In Submission - NeurIPS'21].
- Goktas, D., Viqueira, E. A., & Greenwald, A. (2021a).** Tâtonnement beyond constant elasticity of substitution. *Forthcoming in Conference on Web and Internet Economics, WINE'22*.

PRESENTATIONS AND POSTERS

- Goktas, D. (2020a).** Guest lecturer: Data fluency for all. *Brown Computer Science Course*.
- Goktas, D. (2020b).** Tâtonnement beyond constant elasticity of substitution. *Faculty Flash Talks Brown University*.
- 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'21*.
- Goktas, D. (2021d).** Tâtonnement beyond constant elasticity of substitution. *GAMES 2020*.
- Goldstein, S. C., Goktas, D., 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*.
- 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'21) Contributed Poster*.

TEACHING EXPERIENCE

Algorithmic Game Theory Brown, RI, USA
Teaching Assistant Spring 2021

SERVICE

Conference on Web, Internet, Economics and Networks, WINE'21 Sept. 2021
Reviewer

Cooperative AI NeurIPS Workshop 2021 Sept. 2021
Program Committee Member

Games, Agents, and Incentives Workshop (GAIW) - AAMAS Sept. 2020
Program Committee Member

Algorithmic Game Theory Reading Group Brown, RI, USA
Organizer, External Invited Speakers: Sept. 2020 - Present

- o **Michael Albert - Assistant Professor, University of Virginia Darden School of Business:** Exploiting Correlation in Mechanism Design for Efficiency and Profit
- o **Madelyn Gatchel - PhD Student, University of Michigan:** Multi-headed Neural Networks to Analyze Symmetric Simulation-based Games

Google ExploreCSR Brown, RI, USA
Mentor Spring 2021

OPEN SOURCE SOFTWARE

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

SKILLS

Languages : French (fluent), Turkish (fluent), Spanish (advanced), Arabic (intermediate)

Programming : C++, CSS, CVXPY, ggplot2, Html, Java, Keras, NumPy, Pandas, Python, R, SciPy, SQL, Tensorflow, Tidyverse, VBA