EDAN ORZECH

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SUMMARY

3rd year PhD student at MIT CSAIL. 3+ years of research experience in game theory and coding theory. Expertise in mathematical research in game theory. Demonstrated ability in developing mathematical models of interactions between agents and proving equilibrium properties and rational behavior properties of players in these models.

EDUCATION

Massachusetts Institute of Technology Cambridge, MA
Ph.D. Candidate, Computer Science Expected May 2027
Research areas: Game Theory, Players with Bounded Capabilities (Advisor: Prof. Martin Rinard)

Massachusetts Institute of Technology Cambridge, MA
S.M. Computer Science May 2024
Thesis: Players with Bounded Randomness Capabilities (Advisor: Prof. Martin Rinard)
GPA: 5.0/5.0
Coursework: Distributed Algorithms, Formal Reasoning about Programs, Principles of Digital Communication, Cryptography

Hebrew University of Jerusalem Jerusalem, Israel
B.Sc. Computer Science and Mathematics June 2022
Thesis: Bounds on Unique-Neighbor Codes (Advisor: Prof. Nati Linial)
Amirim Computer Science honors program
GPA: 98.32/100
Coursework: Analysis (real, complex), Probability, Algorithms, Algebra, Complexity Theory, OS, Compilers

SKILLS

Programming Languages: Python, LaTeX (intermediate); C, C++, Java, Assembly, Coq, Shell (beginner and took classes)
Languages: English (fluent), Hebrew (native), Arabic (intermediate), Mandarin Chinese (beginner)

RESEARCH EXPERIENCE

Massachusetts Institute of Technology Cambridge, MA
Graduate Researcher Sept 2022 – Present

- Develop mathematical models of players with bounded capabilities, including computational, epistemological and spatial capabilities (C1, P2, P4)
- Prove equilibrium properties of the models and the effect of bounded capabilities on the models' equilibria and the players' payoffs (C1, P2, P4)
- Advise students (to date: 2) on research projects on repeated games and normal-form games with noisy payoff observations. Design a research project for the students and give feedback on their progress

Hebrew University of Jerusalem Jerusalem, Israel
Undergraduate Researcher Aug 2021 – June 2022

- Conducted research in coding theory, advised by Prof. Nati Linial as part of the Amirim Computer Science honors program
- Studied linear codes that admit efficient unique-decoding. Proved new bounds on the distance-dimension trade-off of linear codes with large stopping distance, and found new linear codes with large stopping distance (P6)

LEADERSHIP AND SERVICE

Massachusetts Institute of Technology, CSAIL Cambridge, MA
Vertical AI Community of Research Student Co-Head Oct 2022 – Present

- Co-lead student activities for the CSAIL Vertical AI Community of Research (CoR) for 150+ students and 13 faculty
- Organize 2 annual retreats for the CoR members, with 25+ students attending, and 50+ weekly lunches for the CoR members, with 20+ students attending regularly, and occasional social activities

- Manage a budget of $50,000+
- Present the CoR's annual status to the CSAIL leadership

TEACHING EXPERIENCE

Hebrew University of Jerusalem Cambridge, MA

Grader Sept 2021 – June 2022

- Graded weekly and bi-weekly student assignment in 2 classes (respectively): Introduction to Algorithms (Fall 2021) and Introduction to Artificial Intelligence (Spring 2022)

PUBLICATIONS

P1. "Edge-Dominance Games on Graphs", Farid Arthaud, **Edan Orzech**, Martin Rinard, SAGT, 2024.

P2. "Randomness Requirements and Asymmetries in Nash Equilibria", **Edan Orzech**, Martin Rinard, arXiv, 2023.

P3. "Emergence of Locally Suboptimal Behavior in Finitely Repeated Games", Yichen Yang, **Edan Orzech**, Martin Rinard, 2023. In submission.

P4. "Correlated vs. Uncorrelated Randomness in Adversarial Congestion Team Games", **Edan Orzech**, Martin Rinard, arXiv, 2023. In submission.

P5. "Decentralized inference via Capability Type Structures in Cooperative Multi-Agent Systems", Charles Jin, Zhang-Wei Hong, Farid Arthaud, **Edan Orzech**, Martin Rinard, arXiv, 2023.

P6. "Bounds on Unique-Neighbor Codes", Nati Linial, **Edan Orzech**, arXiv, 2022. Accepted to Combinatorial Theory.

CONFERENCE PROCEEDINGS

C1. Farid Arthaud, **Edan Orzech**, Martin Rinard (2024, September). Edge-Dominance Games on Graphs. Presentation at the 17th International Symposium on Algorithmic Game Theory (SAGT 2024), Amsterdam, The Netherlands.

AWARDS

Rector's Award, Hebrew University of Jerusalem. Awarded for excellence in undergraduate studies. Awarded to 29 undergraduate students across all university departments. 2021.

Dean's Award, Hebrew University of Jerusalem. Awarded to the top 2.5% students in the Computer Science department. 2020 and 2021.

ACTIVITIES

Sports: Competitive swimming (freestyle and butterfly sprints, retired), ballroom dancing