Bora Yongacoglu | Curriculum Vitae

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Education

Queen's University **Dec 2022**
PhD, Applied Mathematics
Thesis: Decentralized Learning in Stochastic and Mean-Field Games
Advisors: Serdar Yüksel and Gürdal Arslan

Queen's University **Aug 2018**
Master of Science, Applied Mathematics

McGill University **June 2016**
Bachelor of Arts, Majors in Mathematics and Economics

Research Interests

- Reinforcement learning
- Game theory
- Multi-agent (deep) reinforcement learning
- Learning in partially observable systems
- Mean-field games
- Large-scale decentralized multi-agent systems

Work Experience

Post-Doctoral Fellow **January 2023–August 2023**
Department of Mathematics and Statistics, Queen's University
Conducting research on learning in multi-agent systems.

Teaching Fellow **September 2020–April 2021**
Department of Mathematics and Statistics, Queen's University
Instructor for MTHE 493, a fourth year course for students in the Mathematics and Engineering program.

Teaching Assistant **September 2016–April 2020**
Department of Mathematics and Statistics, Queen's University
Various TA positions, including graduate courses on information theory, stochastic processes, and stochastic control, and an undergraduate course on programming in MATLAB for engineering applications.

Research Contributions

Journal Papers

Yongacoglu, B., G. Arslan, and S. Yüksel. "Satisficing Paths and Independent Multi-Agent Reinforcement Learning in Stochastic Games." *Society of Industrial and Applied Mathematics Journal on Mathematics of Data Science.* To Appear.

Yongacoglu, B., G. Arslan, and S. Yüksel. "Decentralized Learning for Optimality in Stochastic Dynamic Teams and Games with Local Control and Global State Information." *IEEE Transactions on Automatic Control.* 67, no. 10 (2022).

Conference Papers

A. Altabaa, **Yongacoglu, B.**, and S. Yüksel. "Decentralized Multi-Agent Reinforcement Learning for Continuous-Space Stochastic Games." *American Control Conference* 2023 (to appear).

Yongacoglu, B., G. Arslan, and S. Yüksel. "Independent Learning and Subjectivity in Mean-Field Games." *2022 IEEE 61st Conference on Decision and Control (CDC)* (pp. 2845-2850). IEEE.

Yongacoglu, B., G. Arslan, and S. Yüksel. "Reinforcement Learning for Decentralized Stochastic Control." *2019 IEEE 58th Conference on Decision and Control (CDC)* (pp. 5556-5561). IEEE.

Yongacoglu, B., G. Arslan, and S. Yüksel. "Decentralized Q-Learning with Constant Aspirations in Stochastic Games." *2019 53rd Asilomar Conference on Signals, Systems, and Computers* (pp. 1744-1749). IEEE.

Preprints (Under Review)

Yongacoglu, B., G. Arslan, and S. Yüksel. "Independent Learning in Mean-Field Games: Satisficing Paths and Convergence to Subjective Equilibria." arXiv: arXiv:2209.05703 (2022).

Yongacoglu, B., G. Arslan, and S. Yüksel. "Asynchronous Decentralized Q-Learning in Stochastic Games."

Other Communications

Yongacoglu, B. "Learning and Dynamics in Mean-Field Games: Satisficing and Subjective Equilibria." *Ninth Meeting on System and Control Theory.* University of Waterloo, May 3rd, 2023.

Yongacoglu, B. "Policy Revision Dynamics and Algorithm Design in Stochastic and Mean-Field Games." *GERAD Seminar.* Polytechnique Montreal, February 15th, 2023.

Yongacoglu, B. "Reinforcement Learning under Decentralized Information." [Poster] *Canadian Mathematical Society Winter Meeting* December 2017.

Yongacoglu, B. "The Role of Information in Conflict." [Poster] *McGill University Arts Research Internship Gala.* December 2014.

Project Supervision

As part of my teaching fellowship for MTHE 493 at Queen's University, I directly supervised capstone projects and final thesis reports of sixteen students, divided into four groups of four students. Over the course of two semesters, each group applied reinforcement learning techniques to the application area of their choosing. Applications included epidemic modelling, portfolio optimization, market making, and automated warehouse management.

Professional Activities

Referee, *Various Journals* **2017-Present**

I have served as an anonymous referee for various academic journals and conferences. A partial list includes the following venues: *Transactions on Automatic Control*, *Automatica*, *Journal of Artificial Intelligence Research*, *International Symposium on Information Theory*, *Systems and Control Letters*, *IEEE Transactions on Control of Network Systems*, *IEEE Conference on Decision and Control*, and *American Control Conference*.

Seminar Organization, *Department of Mathematics and Statistics, Queen's University*

- Stochastic Control and Related Fields — Winter 2023
- Graduate Mathematics Society Seminar — Fall 2022

Awards and Honours

2021-2022: Senator Frank Carrel Fellowship ($10,000)

2020-2021: Ontario Graduate Scholarship ($15,000)

2020-2021: Dorrance Family Award ($7,000)

2019-2020: E.G. Bauman Fellowship ($15,000)

2018-2019: E.G. Bauman Fellowship ($15,000)

2017-2018: R. Samuel McLaughlin Fellowship ($10,000)

2017-2018: Queen's Graduate Award ($1,500)

2016-2017: Queen's Graduate Award ($4,000)

2014 : McGill University Arts Research Internship Award ($4,000)

Skills

Programming Languages

Proficient in Python (including data science packages such as NumPy, Pandas, and Matplotlib), LaTeX, and MATLAB.

Public Speaking

- Several technical presentations delivered to audiences of 50+ professional researchers;
- Over 15 technical seminars delivered to groups of 10-20 people;

Languages

English (native language), Turkish, and French

Service

Secretary and Treasurer **2019-2020**
Graduate Mathematics Society of Queen's University

President **2018-2019**
Graduate Mathematics Society of Queen's University