

Ege Yuceel

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RESEARCH STATEMENT

My overarching goal is to synthesize **scalable** and **theoretically provable optimal** controllers for **autonomous systems** with **nonlinear dynamics** and **partial observations**, leveraging formal verification, control-theoretical, and data-driven methods to ensure strict adherence to safety constraints in motion planning.

EDUCATION

University of Illinois Urbana-Champaign

Illinois, United States

Ph.D. in Electrical and Computer Engineering; Advisor: Prof. Sayan Mitra

Aug 2024 – Present

Promise of Excellence Fellowship

Bilkent University

Ankara, Turkey

B.Sc. in Electrical and Electronics Engineering; GPA: 3.88/4.00 - High Honors Student

Sep 2020 – Jun 2024

Research Excellence Award, Full Scholarship

Related Coursework: Learning for Robotics, Computer Vision, Robust Feedback Control, Feedback and Control Design, Optimization by Vector Space Methods, Digital Signal Processing, Probability/Random Processes, Natural Language Processing

PUBLICATIONS/PREPRINTS

[\[IEEE Control Systems Letters\]](#) Yuksel Arslantas, **Ege Yuceel**, Muhammed O. Sayin, **Strategizing against Q-learners: A Control-theoretical Approach**. [IEEE Xplore](#)

Published in IEEE Control Systems Letters (L-CSS).

[Pre-print] Yuksel Arslantas, **Ege Yuceel**, Yigit Yalin, Muhammed O. Sayin, **Convergence of Heterogeneous Learning Dynamics in Zero-sum Stochastic Games**. [arXiv](#)

Submitted to IEEE Transactions on Automatic Control (TAC).

RESEARCH EXPERIENCE

University of Illinois Urbana-Champaign

Illinois, United States

Graduate Research Assistant, Advisor: Prof. Sayan Mitra

Aug 2024 – Present

- Research on safe-autonomy, reach-avoid planning, state estimation, Lyapunov analysis.

Bilkent University

Ankara, Turkey

Undergraduate Researcher, Advisor: Asst. Prof. Muhammed O. Sayin

Jan 2022 – Jun 2024

- Research on the global convergence of stochastic games. **[Pre-print]**
- Research on the exploitation of the Q-learning algorithm. **[L-CSS]**

Undergraduate Researcher, Advisor: Asst. Prof. Ozgur S. Oguz

September 2023 - June 2024

- Development of a combined task and motion planner for autonomous structure building using Graph Attention Networks (GAT) and k-order Markov Path Optimization (KOMO).

Otto von Guericke University

Magdeburg, Germany

Research Intern, Advisor: Prof. Sanaz Mostaghim

July 2023 – September 2023, Full-time

- Swarm robot optimization and collective path planning. Experience with ROS and Apptainer.
- Assisted a Ph.D. student in developing the Decentralized Collective Conflict Resolution algorithm for safe swarm motion planning with debugging code, contributing to the coding of the local planner and performing experiments.

Aselsan Research Center

Ankara, Turkey

Research Intern

June 2023 – July 2023, Full-time

- Development of an autonomous locomotion software for Vision 60 quadruped robot, coding a variational autoencoder for image compression, combining LSTM+VAE for future observation forecasting. Experience with ROS, OpenCV, PyTorch, Docker.

PROJECTS

Wireless Train Signalization | [GitHub](#)

- Implemented an affordable and scalable wireless railway signalization system using RF and RFID to optimize track capacity and safety through real-time train management. Experience with Google Firebase, Git.

IdentiFusion: Multimodal Facial Attribute Recognition | [GitHub](#)

- Combining NLP and Computer Vision for facial attribute matching. Experience with PyTorch and OpenCV.