Bengisu Güresti

Curriculum Vitae

bengisuguresti0@gmail.com
bengisug.github.io

TECHNICAL SKILLS

- Python, PyTorch, Jax, Flax, Pandas, CVXPY, C, C++, Java, MATLAB, Pandas, LaTeX, VHDL, Verilog
- Deep Learning, Deep Reinforcement Learning, Multi-agent Systems, Game Theory

EDUCATION

- September 2023 – **Computer Science (PhD)**, *Washington University in St. Louis*, St. Louis, USA.
  GPA: 4.0/4.0
  Advisor: Prof. Yevgeniy Vorobeychik
- February 2020 – January 2023 **Computer Engineering (MSc)**, *Istanbul Technical University*, Istanbul, TURKEY.
  MSc Thesis: IQ-Flow: Mechanism Design for Inducing Cooperative Behavior to Self-Interested Agents in Sequential Social Dilemmas
  GPA: 3.88/4.0
  Advisor: Assoc. Prof. Nazim Kemal Ure
- September 2016 – October 2020 **Electronics and Communication Engineering (BSc, Double Major)**, *Istanbul Technical University*, Istanbul, TURKEY.
  GPA: 3.62/4.0
  Bachelor Thesis: Hardware Implementation of Artificial Neural Networks,
  Advisor: Assoc. Prof. Mustafa Altun
- September 2015 – January 2020 **Computer Engineering (BSc)**, *Istanbul Technical University*, Istanbul, TURKEY.
  GPA: 3.72/4.0
  Bachelor Thesis: Robotic Manipulation with Deep Reinforcement Learning,
  Advisor: Assoc. Prof. Sanem Sariel
- August 2018 – February 2019 **Communication Systems (Erasmus Program)**, *École Polytechnique Fédérale de Lausanne*, Lausanne, SWITZERLAND.
- September 2010 – June 2015 **Kabatas Erkek Lisesi (Anatolian High School)**, *Concentration: Math-Science*, Istanbul, TURKEY.
  Primary foreign language: German

AWARDS & SCHOLARSHIPS

- **DeepMind Scholar** at Istanbul Technical University Computer Engineering MSc program
- Selected as Principal Nominee for **Fulbright PhD Scholarship** for 2020-2021 academic year
- **Prime Ministry Scholarship** (for the rank of first 100 – 7th in DIL-2 – in LYS 2016, i.e. Turkish Undergraduate Placement Examination)
- Is Bankasi **Golden Youth Prize**

RESEARCH EXPERIENCE

- September 2023 - **Graduate Researcher**, *Washington University in St. Louis*, CERL Lab, Prof. Yevgeniy Vorobeychik.
  Mechanism Design for Multi-Agent Reinforcement Learning

- April 2020 - May 2023 **Graduate Researcher**, *Istanbul Technical University*, Artificial Intelligence and Data Science Research Center, Assoc. Prof. Nazim Kemal Ure.
  IQ-Flow: Mechanism Design for Inducing Cooperative Behavior to Self-Interested Agents in Sequential Social Dilemmas (MSc Thesis. Accepted to the 22nd International Conference on Autonomous Agents and Multiagent Systems - AAMAS 2023)
  Investigating robustness of agent incentivization methods LIO in Sequential Social Dilemmas with meta-gradients. (Paper Title: Empirical Robustness Analysis of Learning to Incentivize Other Self-Interested Agents. Accepted to ICAI'22, to be published)
  Investigating transfer capability of centralized training decentralized execution paradigm across variable number of agents. (Paper Title: Evaluating Generalization and Transfer Capacity of Multi-Agent Reinforcement Learning Across Variable Number of Agents)
  Deep Reinforcement Learning methods on increasing collaboration in multi-agent systems by learning sparse interaction graphs using self attention mechanism and graph networks for more efficient communication and collaboration.

- June 2019 - March 2020 **Undergraduate Researcher**, *Istanbul Technical University*, Artificial Intelligence and Robotics Laboratory, Assoc. Prof. Sanem Sariel.
  Implementation of Soft Actor Critic (SAC), Training Baxter robot arm using Pybullet Simulation Environment to reach a target point, push an object and grasp an object with DDPG, SAC and Hindsight Experience Replay

- April 2018 - June 2018 **TUBITAK Project Undergraduate Student Scholar**, *Istanbul Technical University*, Artificial Intelligence and Robotics Laboratory, Assoc. Prof. Sanem Sariel.
  Work on Violet (Visual Interpreter and Modeller for Objects and Relations), programming of some relations between objects, Implementation of Kalman filter for vision tracking

PEER-REVIEWED CONFERENCE PAPERS

- **Guresti, B.**, Vanlioglu, A., Ure, N. K. (2023). IQ-Flow: Mechanism Design for Inducing Cooperative Behavior to Self-Interested Agents in Sequential Social Dilemmas. In Proc. of the 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2023), London, United Kingdom, May 29 – June 2, 2023, IFAAMAS.

- **Guresti, B.**, Vanlioglu, A., Ure, N. K. (2022). Empirical Robustness Analysis of Learning to Incentivize Other Self-Interested Agents. The 24th International Conference on Artificial Intelligence. Transactions on Computational Science & Computational Intelligence

PEER-REVIEWED WORKSHOP PAPERS - PRESENTATIONS

- **Guresti, B.**, Ure, N. K., (2021). Evaluating Generalization and Transfer Capacity of Multi-Agent Reinforcement Learning Across Variable Number of Agents. Presented in AAAI Spring Symposium on Challenges and Opportunities for Multi-Agent Reinforcement Learning (COMARL)

TEACHING EXPERIENCE

- 2023-2024 Spring **Teaching Assistant - Deep Reinforcement Learning (Graduate Level)**, *Istanbul Technical University*, Istanbul, TURKEY.

- 2022-2023 Spring — **Teaching Assistant - Graph Theory and Algorithms (Undergraduate Level)**, *Istanbul Technical University*, Istanbul, TURKEY.
- 2022-2023 Fall — **Teaching Assistant - Game Theory (Undergraduate Level)**, *Istanbul Technical University*, Istanbul, TURKEY.
- 2021-2022 Spring — **Teaching Assistant - Optimization for Data Science (Undergraduate Level)**, *Istanbul Technical University*, Istanbul, TURKEY.
- 2021-2022 Fall — **Teaching Assistant - Machine Learning (MSc Level)**, *Istanbul Technical University*, Istanbul, TURKEY.
- 2021-2022 Fall — **Teaching Assistant - Software Engineering (Undergraduate Level)**, *Istanbul Technical University*, Istanbul, TURKEY.
- 2020-2021 Fall — **Teaching Assistant (Volunteer) - Deep Learning (MSc Level)**, *Istanbul Technical University*, Istanbul, TURKEY.

WORK EXPERIENCE

- December 2021 – August 2023 — **Research and Teaching Assistant**, *Istanbul Technical University*, Istanbul, TURKEY.
- July 2018 – August 2018 — **Digital Design and Signal Processing Intern**, *ASELSAN*, Ankara, TURKEY.
  Component design of an NTSC video encoder using VHDL
  Intensity control of a LED using PWM on a Zc706 Evaluation Kit with VHDL
- June 2018–July 2018 — **Software Engineering Intern**, *SIEMENS*, Istanbul, TURKEY.
  Large customer data file generation for performance test of Spectrum Power 7 by shell scripting
  Implementation of automated test using Selenium WebDriver

LANGUAGES

- Turkish: Native
- English: C1
- German: C1
- French: A2/B1

CERTIFICATIONS & TEST SCORES

- TOEFL IBT Home Edition — **Score: 105**, *Istanbul, TURKEY*, August 2021.
- GRE General — **Verbal Reasoning: 157, Quantitative Reasoning: 166, Analytical Writing: 4.0**, *Istanbul, TURKEY*, October 2019.
- DSD-II Deutsches Sprachdiplom — **C1**, *Istanbul, TURKEY*, May 2015.