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Abdullah Vanlıoğlu

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EDUCATION

Istanbul Technical University (MSc)
Defense Technologies
Focus: Multi-Agent Deep Reinforcement Learning

December 2020 - January 2023

Kocaeli University (BSc)
Electrical Engineering

September 2011 - June 2015

WORK EXPERIENCE

Graduate Researcher

December 2020 - Present

Istanbul Technical University, ITU Artificial Intelligence and Data Science Application and Research Center
Advisor: Assoc. Prof. Nazım Kemal Üre

- My research primarily focuses on developing **Multi-Agent Deep Reinforcement Learning** methods to tackle social dilemmas, wherein the selfish interests of agents are in conflict with the collective interests of the group. I have developed **incentive mechanisms** that modify the system's reward setup using **Meta-gradient** and **Offline RL** to align agents' self-interested policies with the cooperative policy.
- Additionally, I have also worked on a **generative model (generative adversarial networks)** that adjusts the difficulty of the environment to solve **RL agent adaptation problem**. This generative model creates new environments that are different from the training environment and have a similar distribution. Depending on the agent score on the generated map, the generative model gets feedback and tries to generate maps that improve the adaptation skills of RL agents.

AI Engineer

December 2019 - December 2020

Pixselect Technology

- Worked on object detection and tracking algorithms

Electric Motor Design Engineer

November 2015 - January 2019

Femsan Electric Motors

- Designed many different type of electric motors and alternators

PUBLICATIONS

* Equal Contribution

- Guresti, B.*, Vanlioglu, A.*, Ure, Nazim Kemal, "Empirical Robustness Analysis of Learning to Incentivize Other Self-Interested Agents", in Proceedings of the Conference of Computational Science and Computational Intelligence (CSCI), 2022.
- Guresti, B., Vanlioglu, A., Ure, Nazim Kemal,. 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, 17 pages.

SKILLS

Programming	Python, C, C++, Matlab
Frameworks	Pytorch, JAX, Tensorflow
Communication	Turkish (native), English