

GUVEN GERGERLI

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My research focuses on developing explainable AI systems through hybrid uncertainty-aware models that integrate Bayesian reasoning, LLMs, and multi-agent reinforcement learning, applying Theory of Mind to enable transparent decision-making in dynamic environments.

EDUCATION

Purdue University

PhD in Computer Science

- Advisor: Joseph Campbell

January 2025 – Present

West Lafayette, IN

Purdue University

MS in Computer Science

August 2023 – May 2025

West Lafayette, IN

Bilkent University

BS in Computer Science

Sep 2018 – June 2023

Ankara, Turkey

INDUSTRY & ACADEMIC EXPERIENCE

CAMP Lab at Purdue University

Research Assistant

July 2024 – Present

West Lafayette, IN

- Developing an uncertainty-based Theory of Mind agent model to capture causal effects in a white-box design for long-horizon learning and reasoning on multi-agent environments
- Developing a method to infer coactivated and sparse agent intentions using offline reinforcement learning and a decomposed reward function for behavior prediction.

Qatar Computing Research Institute

Visiting Researcher

May 2024 – July 2024

Doha, Qatar

- Optimized protein crystallization object detection through data augmentation and hyperparameter tuning and published a web application for protein crystallization object detection.

Human Agent Interactions Lab at Purdue University

Research Assistant

Aug 2023 – May 2024

West Lafayette, IN

- Developed and tested robot interfaces to utilize physical robots as a novel automated medical speech therapy for elders suffering from aphasia.

Turkish Airlines Technology

Machine Learning Intern

Aug 2022 – Sep 2022

Istanbul, Turkey

- Trained an ANN model on Turkish Airlines' flights/revenue data, reaching 85% variance explained in income prediction.
- Built regression visualizations for monthly and daily income forecasts used in reporting.

Vela Partners

Machine Learning Intern

July 2022 – Aug 2022

San Francisco, CA

- Fine-tuned a BERT-based model for semantic similarity on a 500k+ enterprise dataset, boosting downstream k-NN classification accuracy by 5% compared to TF-IDF embeddings.

ESEN Integration System

Software Engineer Intern

June 2021 – Aug 2021

Ankara, Turkey

- Developed a Python program to filter and optimize black box transmission messages for defense industry aircraft.
- Produced an HTML-based UI for data visualization of filtered transmission messages designed for mechanical engineers.

AirCar Corp.

Machine Learning Intern

July 2020 – Aug 2020

Istanbul, Turkey

- Fine-tuned object detection algorithms for top-view terrain analysis in drone emergency landing scenarios.
- Published a drone-view RGB terrain dataset using for fine-tuning object detection algorithms for emergency landing.

PUBLICATIONS

1. **Bayesian Social Deduction with Graph-Informed Language Models.**

S. Rahimirad*, **G. Gergerli***, L. Romero, A. Qian, M. Olson, S. Stepputtis, J. Campbell. In submission for NeurIPS. 2025. *denotes equal contribution

2. **Language Alignment with Socially Assistive Robots in Older Adults: Implications for Aphasia Rehabilitation.**

S. Somji, **G. Gergerli**, J. Lee, J. Jeong. The 62nd Annual Meeting of Academy of Aphasia. 2024.

AWARDS

Bilkent University - OSYM Comprehensive Scholarship

Sep 2018 – Jun 2023

Bilkent University - Deans List (x8)

Sep 2019 – Jun 2023

TEACHING EXPERIENCE

Teaching Assistant - Purdue University

- CS593 Reinforcement Learning (Fall 2025)

SKILLS

- **Languages:** Turkish (Native), English (Professional)
- **Programming Languages:** Python, Java, C, C#, C++, JavaScript, MatLab, PHP, HTML, CSS, SQL
- **Tools & Frameworks:** Pytorch, Keras, Git, GitHub, React.js, Node.js, MongoDB, Firebase, MariaDB, Firebase, JQuery, Linux, Android Studio, MySQL, PostgreSQL, Docker
- **Software Engineering Skills:** ML, NLP, RL, AI, LLM Foundation Models, LLM Fine Tuning, Data science, OOP, Agile Development & Scrum, Data Structures, Requirements Engineering, Algorithm Design