

# GUVEN GERGERLI

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My research focuses on developing explainable AI systems through hybrid uncertainty-aware models integrating Bayesian reasoning, LLMs, and multi-agent reinforcement learning, leveraging Theory of Mind for decision making.

## 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-aware 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 language interfaces enabling **social robots** to deliver automated speech therapy for individuals with aphasia.

### Turkish Airlines Technology

*Machine Learning Intern*

Aug 2022 – Sep 2022

Istanbul, Turkey

- Implemented **time series classifier network** on Turkish Airlines' flights/revenue data, reaching 85% variance explained in income prediction. Implemented a web application for income forecasting utilizing the network.

### Vela Partners

*Machine Learning Intern*

July 2022 – Aug 2022

San Francisco, CA

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

### AirCar Corp.

*Machine Learning Intern*

July 2020 – Aug 2020

Istanbul, Turkey

- Fine-tuned an object detection network** 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. 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

CS593 Reinforcement Learning, Teaching Assistant

Purdue University

## SKILLS

- 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