BOSHEN ZHANG

(540) 497-4082 | boshenzh@usc.edu | https://boshenzh.github.io

RESEARCH INTERESTS

My research interests are rooted in Artificial Intelligence, particularly in the development of decision-making agents capable of robust, rapid, and safe operations within uncertain environments. My objective is to harness and advance decision-making techniques that have broad applications in robotics. The following key areas currently shape my research endeavors:

- Reinforcement Learning
- Human Robot Interaction
- Multi-Agent planning
- Foundation models

EDUCATION

University of Southern California, GPA: 3.60/4.0 Jun 2023 - Dec 2024
Master of Science, Computer Science
Coursework: Robot Learning, Robotics, Autonomous Decision-Making, Computational Human-Robot Interaction, Algorithm Analysis, Machine Learning, Linear Programming and Extensions

Virginia Tech, GPA: 3.60/4.0 Aug 2018 - Dec 2022
Bachelor of Science, Computer Science & Applied Mathematics, magna cum laude

RESEARCH EXPERIENCE

Interactive and Collaborative Autonomous Robotics (ICAROS) Lab Los Angeles, CA
Research Assistant | Advisor: Stefanos Nikolaidis Dec 2023 - Present
Investigating diverse human behavior with LLM-aided Quality Diversity optimization approach in multi-agent reinforcement learning system

- Created an extended version of multi-agent Overcooked environment for human/agents interaction. Developed a framework enabling LLMs to communicate, coordinating cooking tasks and planning tasks.
- Exploring mutation strategy on continuous embedding space with existing Quality Diversity Algorithms

Computational Human Robot Interaction Course Los Angeles, CA
Research Lead Jan 2024 - Present
Enhancing agent adaptability to human behavior by utilizing LLMs for lower-level planning and benchmarking agent adaptability in reactive scenarios

- Developed framework enabling LLMs generate atomic action decisions with low latency. Created reactive scenarios for benchmarking agent's reactive adaptability
- Finetuned llama3-8B-instruct model using LoRa based on trajectory from existing RL algorithm and human experts

Virginia Tech Blacksburg, VA
Research Assistant | Advisor: Sara Hooshangi Aug 2022 – Dec 2022

- Analyzed responses from over 200 students and evaluated impact of practical skills in computer science education

AWARDS & ACHIEVEMENTS

- IISE DAIS Mobile/Web App Competition Finalist 2022
- IISE Annual Conference & Expo, 4th place in final presentation 2022
- Overall 2nd place for VTHacks IX Hackathon (387 participants) 2022

PRESENTATION

- Southern California Robotics Symposium 2024 Riverside, CA
  Benchmarking Reactive Human-AI Collaboration Powered by Foundation Models (Oral)

PROFESSIONAL EXPERIENCE

Virginia Tech Blacksburg, VA
Software Engineer | Advisor: Weijun Xie Aug 2021 - May 2022

- Implemented an educational website for K12 students using JavaScript, Express.js, jQuery, and Bootstrap to showcase drunk driver interdiction network.
- Processed asynchronous HTTP requests using Ajax and maintained/analyzed user data with MySQL, enabling data analysis for 5,000+ users.

Share App Blacksburg, VA

Software Engineer Intern Jun 2021 - Aug 2021

- Developed and integrated a user system with APIs, facilitating database access and processing diverse client requests
- Migrated dataset from MongoDB to DynamoDB, implementing a more efficient table design

COMPUTER SKILLS

Language & Frameworks: Python, Java, JavaScript, PyTorch, C, Swift, ROS