Ethan Beaird

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Education

The University of Tulsa — Tulsa, OK
BS, Computer Science — *Expected 2025*

- GPA: 4.0
- TURC Research Scholar

Experience

AI for Autonomy - Research Intern — May 2024 - Present
Sandia National Laboratories — *Albuquerque, NM*

- Part of the AutonomyNM institute working with the Autonomous Sensing and Control group.
- Researches multi-objective optimization algorithms in complex kinematically constrained environments for goal-oriented path planning and route prediction.
- Develops methods to quantify, visualize, and improve the quality of adversarial behavior prediction.
- Implements and optimizes time-series analysis techniques for proximal policy optimization (PPO) in multi-agent reinforcement learning for coordination and control of CrazyFlies in multi-agent domains.

Undergraduate Research Assistant — February 2023 - Present
University of Tulsa - MASTERS Group — *Tulsa, OK*

- Investigates the application of AI systems to influence and optimize task allocation, completion, and productivity to mitigate procrastination tendencies in human users.
- Expands collaborative reinforcement learning systems for path negotiation and team-focused strategy, exploring how agents negotiate, cooperate, and communicate to better coordinate in complex multi-agent environments.
- Researches novel techniques for cooperation emergence in multi-player social dilemma games.

Undergraduate Research Assistant — January 2023 - Present
University of Tulsa - Human-Centric Software Group — *Tulsa, OK*

- Creates and deploys sophisticated models for Boston Dynamics' Spot robot, including multi-object detection and a Natural Language Processing-powered conversational agent for remote control.
- Responsible for incorporating ML models and data processing pipelines into back-end infrastructure.

Tutor/Near-Peer Teaching Assistant — January 2023 - Present
University of Tulsa — *Tulsa, OK*

- Supports students in introductory programming and CS topics in the Tandy CS Tutoring Lab during the academic school year. Grades and assists with projects for "Artificial Intelligence" course.

Publications / Other Works

Conference Papers

- **Beaird, Ethan**, Feyza Hafızoğlu, and Sandip Sen. "Using Agent Interventions to Reduce User Procrastination Tendencies." In *21st European Conference on Multi-Agent Systems (EUMAS)*, Dublin, Ireland, August 2024.
- Karaoğlu, Selim, Marina Katoh, Titash Majumdar, **Ethan Beaird**, Feyza Hafızoğlu, and Sandip Sen. "Influence of Language Warmth on User Adoption of Agent Recommendations for Multi-Arm Bandits." In *21st European Conference on Multi-Agent Systems (EUMAS)*, Dublin, Ireland, August 2024.
- Pittenger, William, **Ethan Beaird**, and Sandip Sen. "Use of tags and group selection to engender cooperation in multi-player social dilemma games." Under review for *24th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, Detroit, MI, May 2025.

Book Chapters

- **Beaird, Ethan**, Selim Karaoğlu, Feyza Hafızoğlu, and Sandip Sen. "Addressing Procrastination and Improving Task Completion Efficiency through Agent-Based Interventions." In *Bi-directionality in Human-AI Collaborative Systems*, Chapter 12, Elsevier, in press January 2025.

- Karaoğlu, Selim, Marina Katoh, Titash Majumdar, **Ethan Beaird**, Feyza Hafızoğlu, and Sandip Sen. "Effect of Agent Explanations Using Warm and Cold Language on User Adoption of Recommendations for Bandit Problems." In *Explainable and Transparent AI and Multi-Agent Systems*, Lecture Notes in Computer Science, vol. 14847, Springer, September 2024.

Symposia/Workshop Papers

- **Beaird, Ethan**, Selim Karaoğlu, Feyza Hafızoğlu, and Sandip Sen. "Addressing Procrastination and Improving Task Completion Efficiency through Agent-Based Interventions." In *AAAI 2024 Spring Symposium on Bi-directionality in Human-AI Collaborative Systems (BHAICS)*, Stanford University, CA, March 2024.
- **Beaird, Ethan**, Feyza Hafızoğlu, and Sandip Sen. "Agent Interventions to Reduce Procrastination." In *2nd International Workshop on Citizen-Centric Multiagent Systems (CMAS)*, Auckland, New Zealand, May 2024.
- **Beaird, Ethan**, Selim Karaoğlu, Feyza Hafızoğlu, and Sandip Sen. "Addressing Procrastination and Improving Task Completion Efficiency through Agent-Based Interventions." In *5th International Workshop on Autonomous Agents for Social Good (AASG)*, Auckland, New Zealand, May 2024.
- Karaoğlu, Selim, Marina Katoh, Titash Majumdar, **Ethan Beaird**, Feyza Hafızoğlu, and Sandip Sen. "Effect of Agent Explanations Using Warm and Cold Language on User Adoption of Recommendations for Bandit Problems." In *6th International Workshop on Explainable and Transparent AI and Multi-Agent Systems (EXTRAAMAS)*, Auckland, New Zealand, May 2024.

Posters/Other Presentations

- **Beaird, Ethan**, Matthew Hoffman, Bethany Nicholson, and Katrina Ward. "Goal-Oriented Route Prediction." *Sandia National Laboratories Student Showcase*, October 2024.
- **Beaird, Ethan**, Jacob Hart, and John Hale. "Facilitating Human-Robot Interaction: A Digital Twins Approach for Natural Language Processing and Communication with Spot." *TURC Research Colloquium 2024*, April 2024.
- **Beaird, Ethan**, Selim Karaoğlu, Feyza Hafızoğlu, and Sandip Sen. "Addressing Procrastination and Improving Task Completion Efficiency through Agent-Based Interventions." *TURC Research Colloquium 2024*, April 2024.
- Bright, Matthew, Timmy Flavin, **Ethan Beaird**, and Sandip Sen. "Machine Learning to the Rescue." *TURC Research Colloquium 2024*, April 2024.
- Jensen, Spencer, Kyle Williams, Kyle Williams, James Pagan, Douglas Crowder, Christian Llanes, Tim Dodge, and **Ethan Beaird**. "Coordinated Multi-agent Optimal Guidance with Reinforcement Learning." *AIAA DEFENSE Forum 2025*, April 2025.

Projects

Spot Conversational Agent | *Tensorflow, Rasa, Pytorch, Python*

- Developed an advanced Natural Language Processing-powered conversational agent tailored for interfacing with Boston Dynamics' Spot robot.
- Enables users to control Spot through natural language voice commands, enhancing the robot's accessibility.

Human Subjects Research Website | *Flask, Gunicorn, Nginx, Python, JS*

- Designed and developed a comprehensive full-stack custom Flask website for conducting academic research in Human-AI interaction. Deployed using Gunicorn and Nginx. Served to several hundreds of online participants.

Technical Skills

Languages: Python, Java, C++, C#, R, JavaScript, HTML, CSS, Julia
Frameworks: Pytorch, Tensorflow, Keras, scikit-learn, Flask, spot-sdk, Rasa, SQLAlchemy
Developer Tools: Git, Docker, Nginx, Gunicorn, Jira, Postman