Mikihisa Yuasa

(608) 770-5296 | myuasa2@illinois.edu | linkedin.com/in/mikihisa-yuasa

Education

University of Illinois Urbana-Champaign, Champaign, IL — Expected 05/2026
Ph.D. in Aerospace Engineering — GPA: 3.63/4.00
Research Areas: *Explainable Artificial Intelligence (XAI), Reinforcement Learning, Large Language Model (LLM).*
Projects:
- Built a **learning-based control** system for **real-world autonomous vehicle** (Polaris GEM) using ROS.
- Led team in creating algorithm to prevent **language model hallucinations** using **multiple small models**.

University of Wisconsin-Madison, Madison, WI — 08/2017 – 05/2021
B.S. in Engineering Mechanics with Astronautics Option; Certificate in French — GPA: 3.68/4.00

Technical Skills & Awards

Programming	**Proficient:** Python, C++, Rust, MATLAB, TypeScript, HTML/CSS, LaTeX, **Experienced:** Julia, C#, R
Software	**Proficient:** PyTorch, TensorFlow, JAX, CUDA, Pinecone, SOLIDWORKS, PTV Vissim, OpenFOAM, Tecplot, ParaView, Linux, React, **Experienced**: AWS, ROS/ROS2, Gazebo, SQL, GPGPU, Flutter, Ansys
Awards	Japan Student Services Organization Graduate Scholarship by the Government of Japan
Languages	**Native**: Japanese, **Business**: French

Work & Research Experiences

Graduate Research Assistant, *Dr. Huy Tran's Reinforcement Learning Research Group* — 08/2021 – Present
- Formulated a formal method framework to generate **human-readable explanations** for **reinforcement learning**.
- Constructed **neural networks** for inferring decision-making processes of **autonomous systems** using PyTorch.
- Developed **transfer learning** algorithm for ad hoc teaming of **multi-agent reinforcement learning** systems.
- Led the creation of an algorithm verification platform for **robot navigation** in both **simulation** and **real-world**.

Large Language Model (LLM) R&D Intern, *Spiral.AI*, Tokyo, Japan — 05/2023 – 08/2023
- Investigated an **efficient searching algorithm** for the knowledge base for **domain-specific LLMs**.
- Built a method to compactly store **web-crawled data** in a **vector database** using an LLM.

Technical Intern, *Solid Oxide Fuel Cell Team, Bosch Corporation,* Tokyo, Japan — 07/2021 – 08/2021
- Created **educational materials** to launch a business targeting the Japanese **fuel cell** industry.
- Investigated potential **market demands** for solid oxide fuel cells and **autonomous vehicles** in Japan.

Undergraduate Research Assistant*, Dr. Bin Ran's Connected Automated Vehicles & Highways Lab* — 09/2019 – 05/2021
- Conducted **macroscopic** mixed conventional and automated **traffic simulations** under severe weather.
- Led a team to model cooperation of **connected automated vehicles** using **model predictive control**.

Undergraduate Research Assistant, *Dr. Jennifer Franck's Computational Fluid Dynamics Lab* — 05/2018 – 05/2021
- Built a **distributed computing algorithm** to dynamically generate meshes around bioinspired structures.
- Implemented the algorithm as an **opensource high performance computing** library for CFD simulations in C++.

Publications & Presentations

Yuasa, Tran, Sreevinas, "On Generating Explanations for Reinforcement Learning Policies: An Empirical Study," *under review at 2024 IEEE International Conference on Robotics and Automation (IROS 2024).* [link]

Nigam, Parikh, Yuasa, Tran, "Coordination in Ad Hoc Teams with Generalized Policy Improvement," *presented at 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2023).* [link]

Yuasa, Lyons, Franck, "Simulations of flow over a bio-inspired undulated cylinders with dynamically morphing topography," *Journal of Fluids and Structures*, vol. 111, p. 103567, 2022. [link]

Leaderships

Graduate School Application Counselling Volunteer, *XPLANE* — 08/2021 – Present
- Instructed academic writing targeting North American graduate school applications.
- Counselled graduate school application strategies and career paths for North American graduate programs.