

Mikihisa Yuasa

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EDUCATION

University of Illinois Urbana-Champaign , Champaign, IL	Expected 05/2026
Ph.D. in Aerospace Engineering	GPA: 3.63/4.00
Research Areas: <i>Explainable Artificial Intelligence (XAI), Reinforcement Learning, Large Language Model (LLM).</i>	
Projects:	
<ul style="list-style-type: none">Developed learning-based and classical controls for a real passenger vehicle (Polaris GEM) using ROS.Proposed an 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

Programming	Proficient: Python, C++, Rust, MATLAB, TypeScript, HTML/CSS, LaTeX Experienced: Julia, C#, R
Software	Proficient: PyTorch, TensorFlow, JAX, CUDA, ROS/ROS2, Gazebo, SUMO, LangChain, Pinecone, SOLIDWORKS, PTV Vissim, OpenFOAM, Tecplot, ParaView, Linux, React Experienced: AWS, SQL, GPGPU, Flutter, Ansys
Languages	Native: Japanese, Business: French

WORK & RESEARCH EXPERIENCES

Graduate Research Assistant , Dr. Huy Tran's <i>Reinforcement Learning Research Group</i>	08/2021 – Present
<ul style="list-style-type: none">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 , <i>Spiral.AI</i> , Tokyo, Japan	05/2023 – 08/2023
<ul style="list-style-type: none">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, <i>Bosch Corporation</i> , Tokyo, Japan	07/2021 – 08/2021
<ul style="list-style-type: none">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 <i>Connected Automated Vehicles & Highways Lab</i>	09/2019 – 05/2021
<ul style="list-style-type: none">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 <i>Computational Fluid Dynamics Lab</i>	05/2018 – 05/2021
<ul style="list-style-type: none">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

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- Yuasa, M., Tran, H. T., & Sreevinas, R.S. "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, R., Parikh, N., Yuasa, M., & Tran, H. T. "Coordination in Ad Hoc Teams with Generalized Policy Improvement," *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2023)*. [[link](#)]
- Yuasa, M., Lyons, K., & Franck, J. A. "Simulations of flow over a bio-inspired undulated cylinders with dynamically morphing topography," *Journal of Fluids and Structures*, vol. 111, p. 103567, 2022. [[link](#)]

PRESENTATIONS

Nigam, R., Parikh, N., Yuasa, M., Tran, H. T. “Coordination in Ad Hoc Teams with Generalized Policy Improvement,”
2023 IEEE/RSJ International Conference on Intelligent Robots and Systems, Detroit, MI, United States, 2023.

Yuasa, M., Lyons, K., & Franck, J. A. “Simulations of bio-inspired undulated cylinders through dynamic morphing of surface topography,” *presented at the 73rd Annual Meeting of American Physical Society Division of Fluid Dynamics, Chicago, IL, United States, 2020.*

Yuasa, M., Lyons, K., & Franck, J. A. “Flow simulations of bio-inspired undulated cylinders through dynamic morphing of surface topography,” *presented at Computing in Engineering Forum 2020 of Grainger Institute for Engineering, Madison, WI, United States, 2020.*

LEADERSHIPS

Graduate School Application Counselling Volunteer, XPLANE 08/2021 – Present

- Instructed academic writing targeting North American graduate school applications.
- Counseled graduate school application strategies and career paths for North American graduate programs.

Vice President, Secretary, Executive Board Member, JSA at UW-Madison 09/2017 – 05/2020

- Increased the presence of Japanese culture both in the university and local community.
- Presided the executive board to coordinate cultural, language, and professional development events.

College Application Counselor, JPREP 04/2017 – 08/2017

- Tutored solution processes of standardized test problems in Math, Physics, and Chemistry.
- Consulted the admission processes of American colleges.

AWARDS

Japan Student Services Organization Graduate Student Exchange Program Scholarship 2023 – 2026

Aerospace Engineering Departmental Fellowship 2023

Hilldale Undergraduate/Faculty Research Fellowship 2020

Honorable Mention at Computing at Grainger Engineering Forum 2020 2020

University of Wisconsin-Madison Dean’s List 2018 – 2021

Engineering Physics Departmental Scholarship 2018 – 2019

UW-Madison Undergraduate Scholarship for Summer Study 2018

Japan Student Services Organization Student Exchange Program Scholarship 2017 – 2021