KOTA KONDO

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CURRENT POSITION

Stanford University, Stanford, California *Starting Oct. 2026*
Postdoctoral Fellow, Multi-Robot Systems Lab (MSL), advised by Prof. Mac Schwager

EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts *June 2023 - Aug. 2026*
PhD in Aeronautics and Astronautics, Aerospace Controls Laboratory GPA 4.8/5.0

Massachusetts Institute of Technology, Cambridge, Massachusetts *June 2021 - May 2023*
Master of Science in Aeronautics and Astronautics, Aerospace Controls Laboratory GPA 4.8/5.0

Stanford University, Palo Alto, California *June 2020 - Aug. 2020*
Summer Session, DWARF Satellite Project at the Space Rendezvous Laboratory

University of Michigan, Ann Arbor, Michigan *Aug. 2019 - May 2020*
Exchange Program at the Department of Aerospace Engineering Major GPA 4.0/4.0, Overall GPA 4.0/4.0

Kyushu University, Fukuoka, Japan *Apr. 2016 - Sep. 2020*
Bachelor of Science in Aerospace Engineering Major GPA 3.80/4.0, Overall GPA 3.82/4.0

RESEARCH

Stanford University, Prof. Mac Schwager
Postdoctoral research, Multi-Robot Systems Lab (MSL) *Starting Oct. 2026*

1. Vision-language models (VLMs), vision-language-action models (VLAs), and world models for long-horizon manipulation and humanoid tasks

Massachusetts Institute of Technology, Prof. Jonathan How
Trajectory planning and robot learning, funded by Boeing Research & Technology *June 2021 - Aug. 2026*

1. Developed real-time trajectory planners for unknown, dynamic environments (SANDO, DYNUS, MIGHTY) and deployed them on quadrotors and ground robots with onboard perception (T-RO, RA-L)
2. Built learning-based planners: imitation-learned trajectory generation (PRIMER), constraint-guided diffusion policies for UAV planning (CGD), and LLM-based adaptation on aerial robots (REAL)
3. Designed decentralized multiagent planners robust to communication delay (Robust MADER, PUMA), demonstrated on multi-UAV hardware

Stanford University, Assoc. Prof. Simone D'Amico
The DWARF Satellite Project, Attitude Dynamics and Control System (ADCS) *June 2020 - Apr. 2021*

1. Building attitude and orbital simulator on C++/MATLAB Simulink; test DWARF's rotational dynamics
2. Developing C++ codes related to attitude dynamics in S^3, Space Rendezvous Laboratory (SLAB) multi-Satellite Simulator

University of Michigan and Kyushu University, Prof. Ilya Kolmanovsky and Prof. Toshiya Hanada
Detumbling of under-actuated Satellites with Model Predictive Control (MPC) *Mar. 2020 - Mar. 2021*

1. Using MATLAB, demonstrated detumbling under-actuated small satellites, which only employ single-axis magnetic torquer
2. Researched detailed Nonlinear MPC design, controllability, closed-loop stability, and demonstrated feasibility through simulation results

University of Michigan, Prof. Ella Atkins
Explicit Model Predictive Control Applied to Keep-in Geofencing in Low Altitude *Jan. 2020 - Mar. 2021*

1. Developed Explicit MPC (EMPC) controller on quadcopter and implemented MATLAB-based simulations
2. Demonstrated "Home-return" trajectory controlled by EMPC within geofencing airspace, and demonstrated controller's robustness as well as limitations

University of Michigan, Assoc. Prof. James W. Cutler
Satellite Attitude Estimation Using Pyranometers *Sep. 2019 - May 2020*

1. Set up data acquisition environments; analyzed data gained by both single-axis and three-axis sun sensor
2. Developed methods to estimate sun direction; evaluated light source irradiance

PUBLICATIONS

Journal Papers

Kondo, K., Tordesillas, J., How, J. P. (2026). SANDO: Safe Autonomous Trajectory Planning for Dynamic Unknown Environments. arXiv preprint arXiv:2604.07599. Conditionally accepted to IEEE Transactions on Robotics.

Kondo, K., Wu, Y., Kumar, V., How, J. P. (2026). "MIGHTY: Hermite Spline-Based Efficient Trajectory Planning." IEEE Robotics and Automation Letters, 11(6), 6664-6671.

Kondo, K., Peterson, M., Rober, N., Rached Viso, J., Jia, L., Chen, J., Merton, H., How, J., DYNUS: Uncertaintyaware Trajectory Planner in Dynamic Unknown Environments, *arXiv preprint arXiv:2504.16734*, 2025; Submitted to IEEE Transactions on Robotics.

Kondo, K., Figueroa, R., Rached, J., Tordesillas, J., Lusk, P., How, J., Robust MADER: Decentralized Multiagent Trajectory Planner Robust to Communication Delay in Dynamic Environments, IEEE Robotics and Automation Letters, doi: 10.1109/LRA.2023.3342561

Kondo, K., Kolmanovsky, I., Yoshimura, Y., Bando, M., Nagasaki, S., Hanada, T., Nonlinear Model Predictive Detumbling of Small Satellites with a Single-axis Magnetic Actuator, Journal of Guidance, Control, and Dynamics, Vol. 44, No. 6 (2021), pp. 1211-1218 doi: doi/abs/10.2514/1.G005877

Conference Papers

Rached, J., Jia, Y., Kondo, K., How, J. P. (2026). "STORM: Robust Dynamic Object Detection in Cluttered Indoor Scenes via Learned Spatiotemporal Cues." arXiv preprint arXiv:2603.15826. Accepted to 2026 IEEE/RSJ IROS.

Schwartz, D., Kondo, K., How, J. P. "Efficient Navigation in Unknown Indoor Environments with Vision-Language Models." Accepted to IROS 2025 OWN Workshop.

Kondo, K. Tewari C., Tagliabue A., Tordesillas J., Lusk P., How J., "PRIMER: Perception-Aware Robust Learning-based Multiagent Trajectory Planner," Submitted to 2024 IEEE ICRA.

Kondo, K., Tagliabue A.*, Cai X.*, Tewari C., Garcia O., Espitia-Alvarez M., How J.*, "CGD: Constraint-Guided Diffusion Policies for UAV Trajectory Planning," *submitted to 2024 IEEE CDC*. *equal contributions.

Tagliabue A.*, Kondo K.*, Zhao T.*, Peterson M.*, Tewari C.*, How J.*, "REAL: Resilience and Adaptation using Large Language Models on Autonomous Aerial Robots," *accepted to 2024 IEEE CDC*. *equal contributions.

Kinnari, J.*, Thomas, A.*, Lusk, P., Kondo, K., How, J., SOS-MATCH: Segmentation for Open-Set SLAM in Unstructured Environments, accepted to 2024 IEEE IROS

Kondo K., Tewari C., Peterson M., Thomas A., Kinnari J., Tagliabue A., How J.*, "PUMA: Fully Decentralized Uncertainty-aware Multiagent Trajectory Planner with Real-time Image Segmentation-based Frame Alignment," *accepted to 2024 IEEE ICRA*.

Kondo, K., Tordesillas J., Figueroa R., Rached J., Merkel J., Lusk P., How J., Robust MADER: Decentralized and Asynchronous Multiagent Trajectory Planner Robust to Communication Delay, *2023 IEEE ICRA*, London, UK, 2023.

Kondo, K., Yoshimura, Y., Nagasaki, S., Hanada, T., Pulse Width Modulation Method Applied to Nonlin-

ear Model Predictive Control on an Under-actuated Small Satellite, *2021 AIAA SciTech Forum*, Nashville, US, 2021.

Kondo, K., Yoshimura, Y., Bando M., Nagasaki, S., Hanada, T., Model Predictive Approach for Detumbling an Underactuated Satellite *2020 AIAA SciTech Forum*, Florida, US, 2020.

Kondo, K., Yoshimura, Y., Bando M., Nagasaki, S., Hanada, T.,Detumbling with Model Predictive Control for an Underactuated Small Satellite, *AIAA Region VII Australia/International Student Conference*, Australia, 2019.

Theses

Kondo, K., Decentralized Multiagent Trajectory Planning in RealWorld Environments, Masters Thesis, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, Cambridge, MA, 2023.

Conference Posters

Kondo, K., Tewari C., Tagliabue A., Tordesillas J., Lusk P., How J., "PRIMER: Perception-Aware Robust Learning-based Multiagent Trajectory Planner," 2023 IEEE ICRA, UK, 2023.

Kondo, K., Figueroa, R., Rached, J., Tordesillas, J., Lusk, P., How, J., Robust MADER: Decentralized Multiagent Trajectory Planner Robust to Communication Delay in Dynamic Environments, **Won Best Poster Award at ICRA 2023 CAMRS Workshop.**

Kondo, K., Yoshimura, Y., Bando M., Nagasaki, S., Hanada, T., Detumbling of Small Satellites with a Single-Axis Magnetorquer *Proceedings of 63th Space Sciences and Technology Conference*, Tokushima, Japan, 2019.

INVITED TALKS

- University of Pennsylvania, Vijay Kumar's Group, "Safe and Fast Trajectory Planning in Unknown Dynamic Environments: From Multi-Agent Optimization to Learned World Models", September, 2026.
- Brown University Robotics Seminar, "Fast and Safe Real-time Trajectory Optimization," September, 2025.

ACADEMIC SERVICE

Primary reviewer (29 manuscripts):

- IEEE International Conference on Robotics and Automation (ICRA): 7
- IEEE Robotics and Automation Letters (RAL): 6
- IEEE Transactions on Robotics (TRO): 2
- IEEE International Conference on Intelligent Robots and Systems (IROS): 12
- IEEE Open Journal of Control Systems (OJCSYS): 2

Assisted Principal Investigator with manuscript reviews:

- IEEE Transactions on Robotics (TRO): 1
- Journal of Field Robotics: 1
- Science Robotics: 1

ADDITIONAL

US-Japan Council TOMODACHI New England Core Committee *Aug. 2023 - Present*

1. Organizing networking events and helping form a community in the New England region to strengthen the US-Japan relationship

The Japan Society for Aeronautical and Space Sciences Journal, Student Editor

Apr. 2020 - Mar. 2022

1. Interviewed entrepreneurs, engineers, scientists, and professors in aerospace and aeronautical industry
2. Edited and published articles on advanced aerospace technologies in JSASS journals

Q-Li Project, 3U Satellite Developing Team, ADCS team leader *Oct. 2017 - May 2021*

1. Developing under-actuated ADCS; studied algorithms to control Q-Li's attitude in low earth orbits; built MATLAB-based simulator to propagate orbital and rotational dynamics
2. Made presentation and awarded by the Astronomical Society of Japan at the 26th Satellite Design Contest
3. Raised about $52,000 from crowdfunding and Japanese Ministry of Economy, Trade and Industry

U.S.-Japan Council, TOMODACHI Alumni Regional Leader *Mar. 2018 - Mar. 2019*

1. TOMODACHI Initiative is a public-private partnership for Japans recovery from the Great East Japan Earthquake.
2. Organized two events, including event with Julie Chung, former Director of the Office of Japanese Affairs at the U.S. Department of State, and Vanessa Zenji, Consul for Public Affairs at the U.S. Consulate in Fukuoka.

The 6th Asia-Pacific Space Generation Workshop Organizing Team *June 2019 - Nov. 2019*

1. AP-SGW 2019 is workshop for students and young professionals to discuss international space exploration.
2. Collaborated with Space Generation Advisory Council and organized workshop for 100 participants.

Study For Two *Sep. 2016 - Apr. 2018*

1. Study for two is a non-profitable student group to support children in developing countries.
2. Collected used books to make donations to developing nations.

SKILLS

Proficient in Python, C++, PyTorch, ROS/ROS2, Gazebo, MATLAB, LaTeX, CAD; experience in Julia, FORTRAN

HONORS

MIT Mathworks Fellowship *Aug. 2024*

Funded a full year of tuition, living stipend, and insurance costs

Best Poster Award, ICRA 2023 CAMRS Workshop *May 2023*

Awarded for Robust MADER: Decentralized Multiagent Trajectory Planner Robust to Communication Delay in Dynamic Environments

Recruit Scholarship *Apr. 2022*

Funded three full years of tuition, living stipend, insurance costs, and travel for graduate studies

Funai Overseas Scholarship *Nov. 2020*

Funded two full years of tuition, living stipend, insurance costs, and travel for graduate studies

The James H.M. Sprayregen Scholarship at University of Michigan *Dec. 2019*

Financially supported to attend Aerospace conferences in Florida, Japan, and Australia

U.S. - Japan Council TOMODACHI Sumitomo Corporation Scholarship *Apr. 2019*

Endowed $18,000 based on academic achievement to study at University of Michigan

International Society of Transport Aircraft Trading Foundation Scholarship *Jan. 2019*

Funded a one-year tuition senior year for academic excellence in aeronautics and aerospace engineering

Chiyoda Foundation Scholarship *Sept. 2018*

Endowed $250 per month to prepare and apply to graduate programs in the United States.

Yamakawa Prize (President's Award), Kyushu University *Aug. 2017*

Awarded excellent academic record and acts for humanity, sociability, and internationality

Dean's Award (Top 2% freshman GPA), Kyushu University *July 2017*