KOTA KONDO

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EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts *June 2021 - Present*
Master Program, 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

Massachusetts Institute of Technology, Prof. Jonathan How
Multiagent trajectory planning, funded by Boeing Research & Technology *June 2021 - Present*

1. Developed multiagent trajectory planner that is robust to communication delay
2. Implemented imitation Learning-based trajectory generation for multiagnet trajectory planner

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., 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

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 Nonlinear 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.

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.

ADDITIONAL

Astark Robotics Co-founder *Jan. 2024 - Present*

1. Developing fully autonomous multiagent UAV systems for search and rescue operations in disaster recovery.

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

Global Scholars Program (GSP) at University of Michigan *Aug. 2019 - May. 2020*

1. GSP is an academic living-learning community that provides students with opportunities to engage with U.S., international and students on campus.
2. learned about global issues: such as nationalism, human rights, and environmental ethics, from multicultural perspectives.

Apne Aap Women's Collective Internship *Aug. 2019 - Apr. 2020*

1. Assisted in creating materials that would support to provide caring and supportive platform to help women, girls and children in challenged communities in India make choices for a dignified and better quality life.

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.

U.S. Embassy-Keio SFC-TOMODACHI Entrepreneurship Seminar *May. 2017 - Mar. 2018*

Learned about entrepreneurship and problem-solving skills.

Played leadership position and worked to put our business idea into reality.

Selected one of the top 3 teams in business competition and invited to the US entrepreneurship tour.

Entrepreneurship Committee, Kyushu University *May. 2017 - Mar. 2018*

Planned and organized a lecture on entrepreneurship, especially focused on Artificial Intelligent and Machine Learning.

SKILLS

Proficient in MATLAB, Python, C++, LaTex, ROS, ROS2, Gazebo; Experience in Julia, C, SQL, FORTRAN

HONORS

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*