

KOTA KONDO

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EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts	<i>June 2021 - Present</i>
Master's Program, Aerospace Controls Laboratory	GPA 4.8/5.0
University of Michigan, Ann Arbor, Michigan	<i>Aug. 2019 - May 2020</i>
Exchange Program at the Department of Aerospace Engineering	Major GPA 4.0/4.0, Overall GPA 4.0/4.0
Kyushu University, Fukuoka, Japan	<i>Apr. 2016 - Sep. 2020</i>
Bachelor of Science in Aerospace Engineering	Major GPA 3.8/4.0, Overall GPA 3.8/4.0

RESEARCH

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

1. Published work on multiagent trajectory planner that is robust to communication delay
2. Implemented extensive benchmark simulations and developed +10 UAVs for hardware experiments
3. Lead 3 undergraduate students for the project

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 Nonlinear Model Predictive Control (NMPC), demonstrated detumbling under-actuated small satellites, which only employ single-axis magnetic torquer
2. Researched detailed NMPC 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

PUBLICATIONS AND PRESENTATIONS

Journal Paper

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," *JGCD*, Vol. 44, No. 6 (2021), pp. 1211-1218 doi: doi/abs/10.2514/1.G005877

Conference Paper

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," *Submitted to 2023 IEEE ICRA*.

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 Poster

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

MIT Graduate Association of Aeronautics and Astronautics Academic Chair

Feb. 2021 - Present

1. Organize professional development and academic events for AeroAstro community at MIT

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

SKILLS

Proficient in C++, ROS, Python, Git, and MATLAB; Experience in C and CAD

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

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