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Kentaro Uno

– Assistant Professor in Space Robotics

Space Robotics Lab., Department of Aerospace Engineering, Tohoku University.
A01 building Room #411, Aoba 6-6-01, Aramaki-Aza, Aoba-ku, Sendai, 980-8579, Miyagi, Japan
Email: unoken@tohoku.ac.jp
Personal webpage: https://kentarouno.github.io/
Lab. YouTube Channel (digests of our work are shown): https://www.youtube.com/@spaceroboticslab

Education

2018 Oct. – 2021 Sep. **Ph.D. in Aerospace Engineering**, Tohoku University, Japan.
- GPA: 4.0/4.0.
- Dissertation title: Autonomous Limbed Climbing Robots for Challenging Terrain Exploration

2016 Oct. – 2018 Sep. **M.Sc. in Aerospace Engineering**, Tohoku University, Japan.
- GPA: 4.0/4.0.
- Dissertation title: Gait Planning for a Free-Climbing Robot in Consideration of the Gripping Forces

2013 Apr. – 2016 Sep. **B.Sc. in Mechanical & Aerospace Engineering**, Tohoku University, Japan.
- GPA: 3.4/4.0
- Dissertation title: Performance Evaluation of Time-of-Flight camera for a Lunar Exploration Micro-rover
- Half Year Academic Acceleration

Professional Experience

2021 Oct. – **Assistant Professor**, Space Robotics Lab., Department of Aerospace Engineering, Tohoku University, Japan.

2019 – **Paper Reviewer** for *IEEE/RSJ IROS, IEEE ICRA, IEEE RA-L, IEEE T-MECH, IEEE iSpaRo, Space Science Review.*

2019 Apr. – 2021 Sep. **JSPS Research Fellow**, Space Robotics Lab., Tohoku University, Japan.

2019 Oct. – 2020 Sep. **Research Intern**, Robotic Systems Lab., ETH Zurich, Switzerland.

2016 Oct. – 2021 Sep. **Teaching Assistant** for more than five semester classes on Robotics, Control Engineering, Tohoku University, Japan.

2017 Jun. – 2018 Mar. **Software Engineer Intern**, Google Lunar XPRIZE participant, HAKUTO/ispace, inc., Japan.

Awards

2023 ICRA 2023 Outstanding Locomotion Paper Finalist

IEEE RAS Japan Joint Chapter Young Award (ICRA2023)

2021 The Highly Commended Paper Award, CLAWAR conference.

2020 The Best Presentation Award, The Society of Instrument and Control Engineers (SICE), Tohoku Chapter.

2019 The Japan Society of Mechanical Engineering (JSME), Miura Award, Tohoku University.

PUBLICATIONS AND PATENT – see the Google Scholar Citations

Journals (selected)

2023 Enabling Faster Locomotion of Planetary Rovers with a Mechanically-Hybrid Suspension, *IEEE RA-L*.

2021 Analysis of Motion Control for a Quadruped Ground-Gripping Robot for Minor Body Exploration on Uneven Terrain, *Trans. JSASS*.

2018 Qualification of a Time-of-Flight Camera as a Hazard Detection and Avoidance Sensor for a Moon Exploration Microrover, *Trans. JSASS*.

Preliminary Radiation Test Result for Space-Ready Qualification of Lunar Micro Rover, *Trans. JSASS*.

Conference Proceedings (selected)

2023 Lower Gravity Demonstratable Testbed for Space Mobile Robot Experiments, *Proc. IEEE/SICE SII.*

RAMP: Reaction-Aware Motion Planning of Multi-Legged Robots for Locomotion in Microgravity, *Proc. IEEE ICRA.*

Render-to-Real Image Dataset and CNN Pose Estimation for Down-Link Restricted Spacecraft Missions, *Proc. IEEE AeroConf*.

2022 A Pin-Array Structure for Gripping and Shape Recognition of Convex and Concave Terrain Profile, *Proc. IEEE ROBIO*.

Low-Reaction Trajectory Generation for a Legged Robot in Microgravity, *Proc. IEEE/SICE SII*.

Path and Gait Planning of Limbed Climbing Robots for Planetary Cliff Exploration, *Proc. ISTS*.

Lunar Skylight Exploration by a Limbed Climbing Robot Using a Hand-Eye System, *Proc. ISTS*.

2021 Simulation-Based Climbing Capability Analysis for Quadrupedal Robots, *Proc. CLAWAR*.

ClimbLab: MATLAB Simulation Platform for Legged Climbing Robotics, *Proc. CLAWAR*.

HubRobo: A Lightweight Multi-Limbed Climbing Robot for Exploration in Challenging Terrain, *Proc. IEEE RAS Humanoids*.

2020 Non-Periodic Gait Planning Based on Salient Region Detection for a Planetary Cave Exploration Robot, *Proc. i-SAIRAS*.

Dynamic Equilibrium of Climbing Robots Based on Stability Polyhedron for Gravito-Inertial Acceleration, *Proc. CLAWAR*.

Patent

2023 Patents for End-Effector and Robot, Japanese application: 2023-102850

2022 Patents for Gripping Mechanism, PCT international application: PCT/JP2022/021947

Skills

Programming Languages	C/C++, Python, MATLAB, Arduino, html
Softwares	ROS, Gazebo, SolidWorks, EAGLE, Git, LaTeX