

Hannibal Paul

Assistant Professor, Department of Robotics, College of Science and Engineering, Ritsumeikan University

1-1-1 Nojihigashi, Kusatsu, Shiga 525-8577, Japan

hpaul[at]fc.ritsumei.ac.jp | hannibalpaul.com | ORCID: 0000-0001-5469-8342 | Google Scholar:

scholar.google.com/citations?user=L4M6ir8AAAAJ

RESEARCH INTERESTS

Design, modeling, and control of aerial robotic systems for physical interaction with the environment, spanning multi-arm aerial manipulation, tethered multi-UAV networks for confined-space infrastructure inspection, and contact-stable control across sensing modalities. Related interest in extending manipulation and sensing principles to other domains, including soft and deformable object handling.

EDUCATION

Ph.D., Advanced Mechanical Engineering and Robotics

2017 – 2021

Graduate School of Science and Engineering, Ritsumeikan University, Shiga, Japan

M.Tech., V.L.S.I. Design and Embedded Systems

2015 – 2017

NMAM Institute of Technology, Nitte, India — exchange year at Ritsumeikan University (2016–2017)

B.E., Electronics and Communication Engineering

2012 – 2015

NMAM Institute of Technology, Nitte, India

Diploma, Electronics and Communication Engineering

2009 – 2012

Nitte Rukmini Adyanthaya Memorial Polytechnic, India

RESEARCH EXPERIENCE

Assistant Professor

2024/04 – Present

Department of Robotics, Ritsumeikan University — Shiga, Japan

- Direct an independent research program in aerial robotics, leading system design, control development, and experimental validation across several concurrent projects.
- Lead development of tethered multi-UAV networks for confined-space infrastructure inspection, addressing shared power delivery, sensing integration, and coordinated control across cable-linked platforms.
- Continue development of tilt-frame and thrust-vectorized multirotor platforms for sustained physical contact and inspection tasks on vertical and inclined surfaces.
- Secure and manage competitive research funding; supervise graduate and undergraduate student research; teach robotics coursework.

Senior Researcher

2021/10 – 2024/03

Research Organization of Science and Technology, Ritsumeikan University — Shiga, Japan

- Developed vision-based tactile sensing systems for robotic manipulators.
- Designed and evaluated robotic end-effectors for industrial food handling, including a ROS 2-based system for picking and placing granular food materials.
- Continued parallel development of aerial manipulation platforms, including thrust-vectorized and tilt-frame multirotor systems.

Assistant Researcher

2021/04 – 2021/09

Robotics Research Center, Ritsumeikan University — Shiga, Japan

- Extended doctoral research on the Three-Arm Aerial Manipulator System (TAMS), integrating sensing and control for adaptive leveling and overhead docking on uneven or unstable surfaces.

TEACHING EXPERIENCE

Robotics Seminars Instructor

2022 – Present

Ritsumeikan University — Shiga, Japan

- Designed and delivered robotics seminars covering ROS and ROS 2, taught in both Japanese and English.
- Developed hands-on lab materials guiding students through practical implementation and system integration.

Course & Laboratory Instructor

2024/04 – Present

Department of Robotics, Ritsumeikan University — Shiga, Japan

- Teach undergraduate and graduate coursework in robotics; supervise laboratory sessions and student research projects.

TECHNICAL SKILLS

Programming & Computational Tools C, C++, Python, HTML, Git

Simulation & Robotics Frameworks ROS (1 & 2), Gazebo, Isaac Sim, AirSim, PX4 flight-controller development (custom firmware, sensor integration, controller tuning)

Electronics & Embedded Hardware Circuit design, PCB development, FPGA design (Verilog, VHDL), embedded systems

Communication Systems RF and satellite communication systems

CAD Software SolidWorks, Fusion 360

LANGUAGES

English (Native) | Kannada (Native) | Tulu (Native) | Japanese (Business Level) | Hindi (Conversational)

EARLY INDUSTRY EXPERIENCE

Internship — Aircraft Systems

2014

Hindustan Aeronautics Limited (HAL), India

- Hands-on exposure to aircraft systems and their operating principles.

Internship — Telecommunication Systems

2012

Bharat Sanchar Nigam Limited (BSNL), India

- Hands-on exposure to telephone communication systems and network infrastructure.

RESEARCH FUNDING

Grant-in-Aid for Scientific Research (KAKENHI), Wakate Kenkyu (Young Scientists), Japan Society for the Promotion of Science — Principal Investigator, 2023/04 – 2025/03.

Grant-in-Aid for Scientific Research (KAKENHI), Kiban-B, Japan Society for the Promotion of Science — Co-Investigator (Principal Investigator: K. Shimonomura), ongoing.

AWARDS & HONORS

2022 RSJ Advanced Robotics Excellent Paper Award, "TAMS: Development of a Multipurpose Three-arm Aerial Manipulator System," Advanced Robotics.

2020 Best Presentation Award, 11th ISAJ Symposium on Innovations Science and Technology for New Issues and Challenges, for "Three-arm Aerial Manipulator System (TAMS) for UAVs to realize multiple tasks."

2019 IROS 2019 Best Paper Award on Safety, Security, and Rescue Robotics (in memory of Motohiro Kiso) — Finalist, for "Landing of a Multirotor Aerial Vehicle on an Uneven Surface Using Multiple On-board Manipulators."

2018 IROS 2018 Best Paper Award — Finalist, for "Airborne Docking for Multi-Rotor Aerial Manipulations."

2018 AIM-Machines Best Paper Award, for "A Multirotor Platform Employing a Three-Axis Vertical Articulated Robotic Arm for Aerial Manipulation Tasks."

PROFESSIONAL SERVICE & MEMBERSHIPS

Review Editor, Frontiers in Robotics and AI

Member, The Robotics Society of Japan

Member, Institute of Electrical and Electronics Engineers (IEEE)

PUBLICATIONS

Peer-Reviewed Journals

[1] Ricardo Rosales Martinez, **Hannibal Paul**, and Kazuhiro Shimonomura, "Design and Control Strategies of Multirotors with Horizontal Thrust-Vectored Propellers," Drones, vol. 9, no. 2, 145, 2025.2.

- [2] Borwonpob Sumetheeprasit, Ricardo Rosales Martinez, **Hannibal Paul**, and Kazuhiro Shimonomura, "Long-Range 3D Reconstruction Based on Flexible Configuration Stereo Vision Using Multiple Aerial Robots," *Remote Sensing*, vol.16, no.2, 234, 2024.1.
- [3] Zhe Qiu, **Hannibal Paul**, Zhongkui Wang, Shinichi Hirai, and Sadao Kawamura, "An Evaluation System of Robotic End-Effectors for Food Handling," *Foods*, vol.12, no.22, 4062, 2023.11.
- [4] Ricardo Rosales Martinez, **Hannibal Paul**, and Kazuhiro Shimonomura, "Aerial Torsional Work Utilizing a Multirotor UAV with Add-on Thrust Vectoring Device," *Drones*, vol.7, no.9, 551, 2023.8.
- [5] Borwonpob Sumetheeprasit, Ricardo Rosales Martinez, **Hannibal Paul**, Robert Ladig, and Kazuhiro Shimonomura, "Variable Baseline and Flexible Configuration Stereo Vision using Two Aerial Robots," *Sensors*, vol.23, no.3, 1134, 2023.1.
- [6] **Hannibal Paul**, Ricardo Rosales Martinez, Robert Ladig, and Kazuhiro Shimonomura, "Lightweight Multipurpose Three-Arm Aerial Manipulator Systems for UAV Adaptive Leveling after Landing and Overhead Docking," *Drones*, vol. 6, no. 12, 380 (15 pages), 2022.11.
- [7] Ryo Miyazaki, **Hannibal Paul**, Takamasa Kominami, Ricardo Rosales Martinez, and Kazuhiro Shimonomura, "Flying Washer: Development of High-Pressure Washing Aerial Robot Employing Multirotor Platform with Add-On Thrusters," *Drones*, vol. 6, no. 10, 286 (16 pages), 2022.10.
- [8] 宮崎遼, **Hannibal Paul**, 小南貴雅, Ricardo Rosales Martinez, Borwonpob Sumetheeprasit, 下ノ村和弘, "アドオン型水平並進駆動モジュールを備えたマルチロータUAVと高圧洗浄作業への応用," *日本ロボット学会誌*, vol. 40, no. 2, pp. 170-173, 2022.3.
- [9] **Hannibal Paul**, Ryo Miyazaki, Takamasa Kominami, Robert Ladig, and Kazuhiro Shimonomura, "A Versatile Aerial Manipulator Design and Realization of UAV Take-Off from a Rocking Unstable Surface," *Applied Sciences*, vol. 11, no. 19, 9157, 2021.10.
- [10] Ryo Miyazaki, **Hannibal Paul**, and Kazuhiro Shimonomura, "Development of Add-On Planar Translational Driving System for Aerial Manipulation with Multirotor Platform," *Applied Sciences*, vol. 11, no. 4, 1462, 2021.2.
- [11] Robert Ladig, **Hannibal Paul**, Ryo Miyazaki, and Kazuhiro Shimonomura, "Aerial Manipulation Using Multirotor UAV: A Review from the Aspect of Operating Space and Force," *Journal of Robotics and Mechatronics*, vol. 33, no. 2, pp. 196-204, 2021.1.
- [12] **Hannibal Paul**, Ryo Miyazaki, Robert Ladig, and Kazuhiro Shimonomura, "TAMS: development of a multipurpose three-arm aerial manipulator system," *Advanced Robotics*, vol. 35, pp. 31-47, 2021.1.
- [13] Ryo Miyazaki, **Hannibal Paul**, Takamasa Kominami, and Kazuhiro Shimonomura, "Wire-Suspended Device Control Based on Wireless Communication with Multirotor for Long Reach-Aerial Manipulation," *IEEE Access*, vol.8, pp. 172096-172104, 2020.9.
- [14] Ryo Miyazaki, Rui Jiang, **Hannibal Paul**, Yanzhao Huang, and Kazuhiro Shimonomura, "Long-Reach Aerial Manipulation Employing Wire-Suspended Hand with Swing-Suppression Device," *IEEE Robotics and Automation Letters (RA-L)*, vol.4, no.3, pp. 3045-3052, 2019.7. (IF=4.3)

Conference Presentations (International)

- [1] Nicolaj Malle, **Hannibal Paul**, Ricardo Rosales Martinez, Emad Ebeid, Kazuhiro Shimonomura, "Development of an Aerial Robotic Propulsion System for Armor Rod Installation on Overhead Power Lines," 23rd International Conference on Ubiquitous Robots (UR 2026), Osaka, Japan, 2026.7.
- [2] Yibo Xiang, **Hannibal Paul**, Kazuhiro Shimonomura, "Experimental Validation of Radar-LiDAR Fusion for Wall-Relative Pose Estimation of UAVs," (work-in-progress paper), 23rd International Conference on Ubiquitous Robots (UR 2026), Osaka, Japan, 2026.7.
- [3] Ricardo Rosales Martinez, **Hannibal Paul**, Zhongkui Wang, Kazuhiro Shimonomura, "A Co-Simulation Framework for Benchmarking and High-Fidelity Modeling of Deformable Object Manipulation in Soft Robotics," (poster), 23rd International Conference on Ubiquitous Robots (UR 2026), Osaka, Japan, 2026.7.
- [4] **Hannibal Paul**, Kazuhiro Shimonomura, "Tilt-Frame UAV with Sideward Thrusters for Inclined Surface Contact Inspection," (poster), 2026 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2026), Genova, Italy, 2026.7.
- [5] **Hannibal Paul**, Hironori Matsuhisa, Ricardo Rosales Martinez, Kazuhiro Shimonomura, "Autonomous Landing of a Three-Arm UAV on Various Surfaces using Depth Sensing," IEEE International Conference on Real-time Computing and Robotics (RCAR 2025), Toyama, Japan, 2025.6.
- [6] Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Multirotor UAV for Vertical Surface Brushing with Horizontal Thrusters," IEEE International Conference on Real-time Computing and Robotics (RCAR 2025), Toyama, Japan, 2025.6.
- [7] Ryuki Maekawa, Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Wall Approaching Control of Multirotors with Bidirectional Horizontal Thrusters for Inspection Task," IEEE International Conference on Real-time Computing and Robotics (RCAR 2025), Toyama, Japan, 2025.6.
- [8] **Hannibal Paul**, "UAV Systems for Aerial Manipulation: Consulting on Inspection Applications in Hard-to-Reach Environments," IROS 2024 Workshop on Multi-Robot Perception and Navigation Challenges in Logistics and Inspection Tasks, Abu Dhabi, UAE, 2024.10.
- [9] Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Control Framework for Multirotors with Additional Horizontal Thrusters," In 2024 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2024), Boston, MT, USA, 2024.7.
- [10] Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Control of Multirotor with Integrated Horizontal Thrusters," (poster), 2024 IEEE International Conference on Robotics and Automation (ICRA 2024), Yokohama, Japan, 2024.5.

- [11] **Hannibal Paul**, Ricardo Rosales Martinez, and Kazuhiro Shimonomura, "Tilting Frame Multirotor UAV with Bidirectional Thruster System," In 2024 IEEE International Conference on Robotics and Automation (ICRA 2024), Yokohama, Japan, 2024.5.
- [12] **Hannibal Paul**, Ricardo Rosales Martinez, Borwonpob Sumetheeprasit, and Kazuhiro Shimonomura, "A Tilttable Airframe Multirotor UAV Designed for Omnidirectional Aerial Manipulation," In IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2023), Seattle, WA, USA, 2023.6.
- [13] Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Exploration of Aerial Torsional Work Using an Add-On Thrust Vectoring Device," (poster), IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2023), Seattle, WA, USA, 2023.6.
- [14] **Hannibal Paul**, Zhe Qiu, Zhongkui Wang, Shinichi Hirai, and Sadao Kawamura, "A ROS 2 Based Robotic System to Pick-and-Place Granular Food Materials," In 2022 IEEE International Conference on Robotics and Biomimetics (ROBIO 2022), Jinghong, China, 2022.12.
- [15] Toshiki Yamada, Takayoshi Tsuji, **Hannibal Paul**, Ricardo Rosales Martinez, Robert Ladig, and Kazuhiro Shimonomura, "Exploration of UAV Rope Handling and Flight in Narrow Space Strategies, using a Three-arm Aerial Manipulator System," In 2022 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2022), pp. 677-682. IEEE, 2022.7.
- [16] Yuyan Wang, **Hannibal Paul**, Ryo Miyazaki, Ricardo Rosales Martinez, Takamasa Kominami, Robert Ladig, and Kazuhiro Shimonomura, "Active Translatory Drive System with Docking Capability for UAV Power Line Inspection," In 2022 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2022), pp. 689-694. IEEE, 2022.7.
- [17] Takayoshi Tsuji, Toshiki Yamada, **Hannibal Paul**, Ricardo Rosales Martinez, Robert Ladig, Kazuhiro Shimonomura, "Collision Avoidance of a Multirotor UAV with Three-arm Aerial Manipulator System," (poster), IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2022), Sapporo, Hokkaido, Japan, 2022.7.
- [18] **Hannibal Paul**, Ryo Miyazaki, Takamasa Kominami, Robert Ladig, and Kazuhiro Shimonomura, "Adaptively Leveling a UAV with Three-arm Aerial Manipulator System on Shifting Ground," In 2021 Aerial Robotic Systems Physically Interacting with the Environment (AIRPHARO 2021), pp. 1-4. IEEE, 2021.10.
- [19] Ryo Miyazaki, **Hannibal Paul**, Takamasa Kominami, Ricardo Rosales Martinez, Borwonpob Sumetheeprasit, and Kazuhiro Shimonomura, "Development of High-Pressure Washing Aerial Robot Employing Multirotor Platform with Add-on Planar Translational Driving System," In 2021 Aerial Robotic Systems Physically Interacting with the Environment (AIRPHARO 2021), pp. 1-4. IEEE, 2021.10.
- [20] Takao Sato, Takamasa Kominami, **Hannibal Paul**, Ryo Miyazaki, Robert Ladig, and Kazuhiro Shimonomura, "Passive Perching and Landing Mechanism for Multirotor Flying Robot," In 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2021), pp. 396-401. IEEE, 2021.7.
- [21] **Hannibal Paul**, Koji Ono, Robert Ladig, and Kazuhiro Shimonomura, "A Multirotor Platform Employing a Three-Axis Vertical Articulated Robotic Arm for Aerial Manipulation Tasks," In 2018 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM 2018), pp. 478-485. IEEE, 2018.7.
- [22] **Hannibal Paul**, Koji Ono, Robert Ladig, Kazuhiro Shimonomura, "Deployment of a three-axis vertical articulated manipulator using an aerial robot," (poster), 2018 IEEE International Conference on Robotics and Automation (ICRA 2018), Brisbane, Australia, 2018.5.

Presentations at Domestic Conferences / Symposia

- [1] Yibo Xiang, **Hannibal Paul**, Ricardo Rosales Martinez, Kazuhiro Shimonomura, "Wall-Relative Pose Estimation for UAVs Using mmWave Radar," (poster), 2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025), Hangzhou, China, 2025.10.
- [2] **Hannibal Paul**, Ricardo Rosales Martinez, Kazuhiro Shimonomura, "Planar Flight UAV with Tilt-Free Control for Constrained-Space Inspection," (poster), 2025 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2025), Hangzhou, China, 2025.10.
- [3] Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Aerial Contact Operations with Controlled Brush Interaction on Vertical Surfaces," 第43回日本ロボット学会学術講演会 (RSJ 2025), 2025.9.
- [4] **Hannibal Paul**, Ricardo Rosales Martinez, Kazuhiro Shimonomura, "Multirotor UAV with Tilting Frame and Bidirectional Thrusters," (poster), 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024), Abu Dhabi, UAE, 2024.10.
- [5] **Hannibal Paul**, Ricardo Rosales Martinez, Kazuhiro Shimonomura, "UAV Motion Control using a Tilttable Frame with EDFs," 第42回日本ロボット学会学術講演会 (RSJ 2024), 2024.9.
- [6] Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Force Control in Multirotor UAV Equipped with EDFs," 第42回日本ロボット学会学術講演会 (RSJ 2024), 2024.9.
- [7] Daigo Yamamori, **Hannibal Paul**, Kazuhiro Shimonomura, "Angle measurement of wall surface for tilting frame multi rotor UAV," 日本機械学会ロボティクス・メカトロニクス講演会 (ROBOMECH 2024).
- [8] Takamasa Kominami, Liang Zou, Ricardo Rosales Martinez, **Hannibal Paul**, and Kazuhiro Shimonomura, "Physical Contact with Wall Using a Multirotor UAV Equipped with Add-On Thruster for Inspection Work," In 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2023), Detroit, MI, USA, 2023.10.
- [9] **Hannibal Paul**, Ricardo Rosales Martinez, and Kazuhiro Shimonomura, "Transformable Multirotor Airframe Design for Infrastructure Inspection," (oral and poster), In 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2023), Detroit, MI, USA, 2023.10.

- [10] **Hannibal Paul**, Ricardo Rosales Martinez, Kazuhiro Shimonomura, "Aerial Manipulator Coupled UAV with Tilttable Airframe Design for Infrastructure Inspection," 第41回日本ロボット学会学術講演会 (RSJ 2023), 仙台, 2023.9.
- [11] Sumetheeprasit Borwonpob, Ricardo Rosales Martinez, **Hannibal Paul**, Kazuhiro Shimonomura, "Variable Baseline and Flexible Configuration Stereo Vision using Multiple Aerial Robots," 第41回日本ロボット学会学術講演会 (RSJ 2023), 仙台, 2023.9.
- [12] 前川 竜輝, Ricardo Rosales Martinez, **Hannibal Paul**, 下ノ村 和弘,
"下向き推進装置を備えたマルチロータUAVの試作と評価," 日本機械学会ロボティクス・メカトロニクス講演会2023 (ROBOMECH 2023), 名古屋, 2023.6.
- [13] Zou Liang, 柴田 航士, 小南 貴雅, Ricardo Rosales Martinez, **Hannibal Paul**, 下ノ村 和弘,
"水平推進装置を備えたマルチロータUAVによる壁面への接触,"
日本機械学会ロボティクス・メカトロニクス講演会2023 (ROBOMECH 2023), 名古屋, 2023.6.
- [14] Ryo Miyazaki, Wataru Matori, Takamasa Kominami, **Hannibal Paul**, and Kazuhiro Shimonomura, "Multirotor Long-Reach Aerial Pruning with Wire-Suspended Saber Saw," In 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022), IEEE, October 2022.10.
- [15] Ricardo Rosales Martinez, Ryo Miyazaki, **Hannibal Paul**, Takamasa Kominami, Robert Ladig, Kazuhiro Shimonomura, "Valve Turning Work Utilizing a Multirotor Aerial Robot with Add-On Thrust Vectoring Device," (poster), 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022), Kyoto, Japan, 2022.10.
- [16] **Hannibal Paul**, Kazuhiro Shimonomura, "Three-arm Aerial Manipulator System for Adaptive Leveling and Docking," 第40回日本ロボット学会学術講演会 (RSJ 2022), 東京, 2022.9.
- [17] 尾山 颯汰, **Hannibal Paul**, 下ノ村和弘, "モバイルマニピュレータに搭載する小型触覚画像センサの開発," 日本機械学会ロボティクス・メカトロニクス講演会2022 (ROBOMECH 2022), 北海道, 2022.6.
- [18] 眞鳥航, 宮崎遼, 小南貴雅, **Hannibal Paul**, Robert Ladig, 下ノ村和弘,
"ワイヤ懸架レスプロソーを備えた飛行ロボットによる枝打ち作業,"
日本機械学会ロボティクス・メカトロニクス講演会2022 (ROBOMECH 2022), 北海道, 2022.6.
- [19] 宮崎遼, **Hannibal Paul**, 小南貴雅, Ricardo Rosales Martinez, Borwonpob Sumetheeprasit, 下ノ村和弘,
"アドオン型水平並進駆動モジュールを備えたマルチロータUAVと高圧洗浄作業への応用,"
第39回日本ロボット学会学術講演会 (RSJ 2021), オンライン, 2021.9.
- [20] Ricardo Rosales Martinez, **Hannibal Paul**, Ryo Miyazaki, Borwonpob Sumetheeprasit, Robert Ladig, Kazuhiro Shimonomura, "Add-on Thrust Vectoring System for Multirotor Aerial Manipulation," 第39回日本ロボット学会学術講演会 (RSJ 2021), オンライン, 2021.9.
- [21] **Hannibal Paul**, "Three-arm Aerial Manipulator System (TAMS) for UAVs to realize multiple tasks," 11th ISAJ Symposium on Innovations Science and Technology for New Issues and Challenges, web conference, 2020.12.
- [22] **Hannibal Paul**, Ryo Miyazaki, Robert Ladig, and Kazuhiro Shimonomura, "Landing of a Multirotor Aerial Vehicle on an Uneven Surface Using Multiple On-board Manipulators," In 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2019), pp. 1926-1933. IEEE, 2019.11.
- [23] Ryo Miyazaki, **Hannibal Paul**, Kazuhiro Shimonomura, "Position Control of Wire-Suspended Hand for Long-Reach Aerial Manipulation," (poster), 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2019), Macau, China, 2019.11.
- [24] **Hannibal Paul**, Robert Ladig, Kazuhiro Shimonomura, "Aerial robot with three manipulators for grasping and landing," The 15th Joint Workshop on Machine Perception and Robotics (MPR 2019), Shiga, Japan, 2019.11.
- [25] **Hannibal Paul**, Robert Ladig, Kazuhiro Shimonomura, "Aerial robot with three manipulators for grasping and landing," 第37回日本ロボット学会学術講演会 (RSJ 2019), 東京, 2019.9.
- [26] 宮崎遼, **Hannibal Paul**, 下ノ村和弘, "ワイヤ懸架ハンドによるロングリーチ空中マニピュレーション," 日本機械学会ロボティクス・メカトロニクス講演会2019 (ROBOMECH 2019), 広島, 2019.6.
- [27] Ryo Miyazaki, Rui Jiang, **Hannibal Paul**, Koji Ono, and Kazuhiro Shimonomura, "Airborne docking for multi-rotor aerial manipulations," In 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2018), pp. 4708-4714. IEEE, 2018.10.
- [28] **Hannibal Paul**, Robert Ladig and Kazuhiro Shimonomura, "Design of a Multi-purpose Aerial Manipulator System," The 14th Joint Workshop on Machine Perception and Robotics (MPR 2018), Fukuoka, Japan, 2018.10.
- [29] 小野晃嗣, **Hannibal Paul**, Robert Ladig, 下ノ村和弘,
"垂直多関節型マニピュレータを備えた高所作業用飛行ロボット," 計測自動制御学会第18回SI部門講演会(SI 2017), 仙台, 2017.12.
- [30] 小野晃嗣, **Hannibal Paul**, Robert Ladig, 下ノ村和弘,
"機体固定用ハンドと作業用マニピュレータを備えた高所作業用飛行ロボットの作業範囲拡大," 日本機械学会ロボティクス・メカトロニクス講演会2017, 福島, 2017.5.