Ankit Ravankar

Curriculum Vitae

Aoba Ward, Kaigamori, 6-5-3
Sendai, Japan 981-0942
✉ *Personal: ankitravankar@gmail.com*
https://ravankit.github.io/

Education

Oct.2012–Sept.2015 **Ph.D. Engineering**, *Hokkaido University*, Japan, Human Mechanical Systems and Design Engineering with specialization in Robotics and Artificial Intelligence.
(High Honors)
Thesis Title: Probabilistic Approaches and Algorithms for Indoor Robot Mapping in Structured Environments
Supervisor: Prof. Yukinori Kobayashi

Oct.2010–Sept.2012 **Master of Engineering**, *Hokkaido University*, Japan, *GPA – 3.9/4*
(Topper of the graduating class).
Human Mechanical Systems and Design Engineering

April.2005–March.2009 **Bachelors of Engineering**, *University of Pune*, India, *First Class*.
Production Engineering

Additional Certifications & Diplomas

2013–2014 **Diploma in Sustainability Science**, *Special Coordinated Training Program for Sustainability Leaders(StraSS), Center for Sustainability Science, Hokkaido University*, Japan.
Environmental Leaders Training Certificate

Professional Experience

Jul 2022 - Present **Specially Appointed Associate Professor**, Faculty of Engineering, Department of Robotics, Tohoku University, Sendai, Japan.

Jun 2021 - Jun 2022 **Specially Appointed Lecturer**, Faculty of Engineering, Department of Robotics, Tohoku University, Sendai, Japan.

Apr 2021 - May 2021 **Research Associate**, Faculty of Engineering, Department of Robotics, Tohoku University, Sendai, Japan.

Apr 2016 - Mar 2021 **Assistant Professor**, Research Faculty of Engineering Division of Human Mechanical Systems and Design, Hokkaido University, Sapporo, Japan.

Oct 2015 - Mar 2016 **Assistant Professor**, Institute for the Advancement of Higher Education, Hokkaido University, Sapporo, Japan.

Dec 2014 - Apr 2015 **Project Assistant**, Open Education Center, Hokkaido Unviversity, Sapporo, Japan.

Jul 2010 - Sept 2010 **Network Administrator**, Dewas Public Higher Secondary School, Dewas, India.

June 2009- July 2010 **Production Engineer**, VAIBHAV INDUSTRIES, Sangli, India.

Research Areas

Autonomous Mobile Robots
Mobile robots and multi-robot systems
Artificial Intelligence
Intelligent Control
Healthcare and Assistive Robotics
Service Robotics
Field Robotics
Navigation
Machine Vision

Scholarships and Awards

SCHOLARSHIPS

Oct.2012- Sept.2015 ***Mombukagakusho*** Full MEXT Scholarship (Doctoral Course), Ministry of Education, Culture, Sports, Science & Technology, Japan

Oct.2010- Sept.2012 ***Mombukagakusho*** Full MEXT Scholarship (Masters Course), Ministry of Education, Culture, Sports, Science & Technology, Japan

Sept.2004- March.2005 ***Bright Student Scholarship Award*** Full scholarship awarded for securing highest marks in Senior High School, Dewas Public H.S. School, Dewas, India

AWARDS

Apr.2025 ***Student Outstanding Presentation Faculty Advisor Award***, 2024 Fall Meeting of the Japan Society for Design Engineering, Japan Society for Design Engineering.
Paper title: 「画像認識を用いた筋肉の動きによるロボット制御システムの開発」 *(Development of a Robot Control System Using Muscle Movement with Image Recognition)* Winner: Ankit A. Ravankar

Feb.2025 ***Best Paper Award***, International Conference on Communication, Computing and Data Security, (IC-CCDS) 2025, Mumbai, India
Paper title: *Uncertainty Evaluation in Colorectal Polyp Segmentation* Auhors: Ryouya Tazawa, Abhijeet Ravankar, Ankit A. Ravankar

Jan.2025 ***Best Student Paper Award***, IEEE/SICE International Symposium on System Integrations (SII 2025), Munich, Germany, January 2025.
Paper title: *Open Vocabulary Object Search Utilizing Large Language Models and Fuzzy Inferencing* Auhors: Akash Chikhalikar, Ankit A. Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata

May.2024 ***Best Workshop Paper Award***, IEEE-ICRA 2024 Yokohama, Japan (Workshop on Assistive Systems: Lab to Patient Care).
Paper title: *ROS 2 Healthcare: Closing the Loop Between Human Sensing and Robotic Interventions* Auhors: Jorge Peña-Queralta, Ricardo Javier Manriquez Cisterna, Heba Hussein, Alexander Breuss, Oriella Gnarra, Medhi Ejtehadi, Ankit A. Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata, and Diego Paez Granados

Feb.2024 ***Best Paper Award***, International Conference on Communication, Computing and Data Security, (IC-CCDS) 2024, Mumbai, India
Paper title: *Distributed Multi-agent Mapping and Localization For Enhanced Autonomous Navigation*
Auhors: Ankit A. Ravankar

Dec.2022 ***SI2022 Excellent Presentation Award,***, Society of Instrument and Control Engineers (SICE) Japan (SICE SI2022 Conference).
Paper title: *Development of a Walking Support Robot for Motivating Human Walking*

Sept.2022 ***SICE Annual Conference International Award***, Society of Instrument and Control Engineers (SICE) Japan (SICE Annual Conference 2022).
Paper title: *Automatic Dimensional Inspection System of Railcar Wheelset for Condition Monitoring,* Awarding Organization: The Society of Instrument and Control Engineers, JAPAN

Sept. 2021 ***SICE Best Paper Award***, Society of Instrument and Control Engineers (SICE) Japan Best Paper Award for the article published in 2020.
Paper title: *Line Segment Extraction and Polyline Mapping for Mobile Robots in Indoor Structured Environments Using Range Sensors,* Awarding Organization: The Society of Instrument and Control Engineers, JAPAN

Dec.2020 ***SI2020 Excellent Presentation Award***, 21st SICE System Integration (SI2020) Conference, 2020 (online)
Paper title (in Japanese): 「UAVを用いた自動スペクトル計測システムにおけるジンバル制御」 Gimbal Control in Automatic Spectrum Measurement System Using UAV

Dec.2020 ***SI2020 Excellent Presentation Award***, 21st SICE System Integration (SI2020) Conference, 2020 (online)
Paper title (in Japanese): 「積雪環境におけるスキャンマッチングを用いた自己位置推定性能の改善」 Improving Self-Positioning Performance Using Scan Matching in Snow-Covered Environments

Feb.2020 ***Best Paper Award***, 25th International Symposium on Artificial Life and Robotics (AROB), 2020, Beppu, Japan,
Paper title: *Path Planning for Service Robots in Continuous Operation*

Oct.2019 ***Honorable Mention Award (top 5% paper)***, 8th International Congress on Advanced Applied Informatics, International Conference on Data Science and Institutional Research (DSIR 2019),
Paper title: *Managing the Project: The Essential Need for Project Management Training and Education in Graduate Schools*

Jun.2018 ***Best Poster and Presentation Award for Young Scientist***, 6th AGH Poland- Hokkaido University, Japan (AGH-HU) Joint Symposium,
Paper title: *Development of port facilities inspection robot using multi-copter*

Feb.2018 ***Young Author Award***, 23rd International Symposium on Artificial Life and Robotics (AROB), 2018, Beppu, Japan, Paper title: *Autonomous mobile robot mapping and navigation using topological and semantic information*

Jan.2018 ***6U-Happier Travel Grant***, 2nd Taiwan-Japan International Forum, 28 Feb- 3 March, 2018, Taipei, Taiwan

Oct. 2015 ***Student Best Paper Award***, 15th International Conference on Control, Automation and Systems, Busan, S. Korea,
Paper title: *Path smoothing extension for various robot path planners*

Nov. 2015 ***Best Paper Award***, 4th International Doctoral Symposium in Mechanical Engineering, Hokkaido University, Japan

Dec.2011 ***IEEE Young Author Award Finalist***, IEEE/SII (Annual International Conference on System Integration, Society of System Integration and Control Engineering), Kyoto, Japan,
Paper title: *Map building from laser range sensor information using mixed data clustering and singular value decomposition in noisy environment.*

2007 ***Best Paper Award*** –Best paper award in technical paper presentation, Sinhgad College of Engineering, Pune, India

2008 ***Best Paper Award*** –Best paper award in technical paper presentation at the annual technical festival -Kshitij, Indian Institute of Technology, Kharagpur, India

2005 ***Best Outgoing Student Award***, Dewas Public H.S. School, Dewas, India

1994-2004 Consistent ***Proficiency Award in Studies*** for scoring the highest marks in school examinations for 10 years straight.

Research Grants and Competitive Funds

ONGOING PROJECTS

2024-2028 「日本学術振興会 科学研究費助成事業 基盤（C)」 Japan Society for the Promotion of Science (JSPS) Kakenhi Grant-in-Aid for Scientific Research(C) "Integrating Large Language Models for Long Horizon Task Planning in Multi-robot Scenarios", (Principal investigator) (4.4 Million JPY)

2025-2029 「日本学術振興会 科学研究費助成事業 基盤（C)」 Japan Society for the Promotion of Science (JSPS) Kakenhi Grant-in-Aid for Scientific Research(C) 脊髄性筋萎縮症 (SMA）患者向け完全自律移動車椅子ロボットの開発 "Development of a Fully Autonomous Mobility Wheelchair Robot for Spinal Muscular Atrophy (SMA) Patients", (Co-Principal investigator) (4.3 Million JPY)

2021-2025 「日本学術振興会 科学研究費助成事業 若手研究」 Japan Society for the Promotion of Science (JSPS) (KAKENHI), Grant-in-Aid for Early-Career Scientists "Development of Lifelong SLAM System for Service Robots using Deep Semantic Information", (Principal investigator) (4 Million JPY)

2022-Present 「精神状態推定及び改善技術の研究」 (AWL Inc. Japan) "Development of Mental Health Improvement System using Robots and Computer Vision", (Co-Principal investigator) (1.5 Million JPY per year)

COMPLETED PROJECTS

2021-2023 「鉄道車両における画像診断とCADデータを使用した検査システム "Inspection System for Railway Vehicles using Image Diagnosis and CAD data", Kawasaki Heavy Industries Limited, Japan (Principal investigator) (2M JPY)

2020-2021 「令和2年度「創成若手研究加速支援事業」URA北海道大学」 "Long Term Autonomous Navigation of Multi-robot Systems considering Semantic Features", SOUSEI Support Program for Young Researchers in FY 2020, Hokkaido University (Principal investigator) (1 Million JPY)

2020-2021 「令和2年度f3 プロジェクト研究」 "Heterogeneous Aerial and Ground Multi-robot collaborative System for Navigation in Cluttered Environment", F3 Project, Department of Aerospace Engineering, Hokkaido University (Principal investigator) (0.65 Million JPY)

2020-2021 「鉄道車両における画像診断とCADデータを使用した検査システム "Inspection System for Railway Vehicles using Image Diagnosis and CAD data, Kawasaki Heavy Industries Limited", Japan (Principal investigator) (0.8 Million JPY)

2019-2020 「鉄道車両における画像診断とCADデータを使用した検査システム "Inspection System for Railway Vehicles using Image Diagnosis and CAD data", Kawasaki Heavy Industries Limited, Japan (Principal investigator) (1 Million JPY)

2018-2020 「ロバスト農林水産工学研究プログラム “Development of a Deep Learning based Knowledge Sharing Cloud System for Robust Agriculture", Hokkaido University Research and Education center for Robust Agriculture, Forestry and Fisheries Industry. (Co-investigator) (1.5 Million JPY)

2018-2020 「ロバスト農林水産工学研究プログラム “Development of an autonomous weeding robot for agriculture fields", Hokkaido University Research and Education Center for Robust Agriculture, Forestry and Fisheries Industry. (Co-investigator) (1.5Million JPY)

2016-2018 「UAVによる港湾設備点検の自動化を支援する高精度自己位置同定システムの開発」平成29年度港湾空港総合技術センター研究開発助成 “Development of high accuracy self-position identification system to support automation of port facility inspection using UAV", Service center of Port Engineering, Ministry of Economy, Trade and Industry (METI), Japan. (Co-investigator) (2 Million JPY)

2016-2020 「積雪寒冷地の交通弱者支援のための雪道走行を可能とする自動運転技術の開発」平成29年度中小企業経営支援等対策費補助金（戦略的基盤技術高度化支援事業） “Development of autonomous driving technology to support traffic vulnerability in snow cold areas", Strategic foundation technology advancement support project, Ministry of Economy, Trade and Industry, (METI), Japan. (Co-investigator) (15 Million JPY)

2016-2019 「深層学習の特徴点抽出機能に基づく非人工環境下におけるロバストなSLAMの実現」H29年度科研費：基盤研究（C） “Realization of robust SLAM under non-artificial environment based on feature extraction and deep learning", Grant-in-aid for scientific research (C), Japan Society for the Promotion of Science (JSPS). (Co-investigator) (5 Million JPY)

2017-2020 「素材流通のICT化に伴う木材検知システム研究」地方創生推進交付金「地域資源活用による基盤産業ブランド力連携プロジェクト事業」の再委託 “Research on timber detection system accompanying ICT conversion of material distribution", Regional industrial resource utilization project, Ministry of Economy, Trade and Industry (METI), Japan. (Co-investigator) (1.5 Million JPY)

2017-2018 「マルチモーダル深層学習を用いた農業環境におけるロバスト画像認識システムの構築」人工知能研究振興財団 “Development of robust computer vision system for agricultural environment using multi-modal deep learning", Artificial Intelligence Research Promotion Program (Co-investigator) (0.5 Million JPY)

List of Publications

Total Citations: 2197 (as of 8th June 2025) **H-index:** 25 (Google), 17 (WoS)
Complete list of publications: Google Scholar Page
https://scholar.google.co.jp/citations?user=DOiXntEAAAAJ&hl=en&authuser=2&oi=ao
Scopus Author Profile: https://www.scopus.com/authid/detail.uri?authorId=55032275000
WOS Author Profile: https://www.webofscience.com/wos/author/record/L-8613-2016

REFEREED JOURNAL PUBLICATIONS

- **2025**
  1. ***Real-Time Geometric-Registration-Based Precision Localization for Autonomous Docking in Unstructured Factory Environment***, Sebastian Fernando Chinchilla Gutierrez, Manaru Watanabe, and Masahiro Ooyama, Takayuki Yamada, Tomoaki Yamada, Naoto Toshiki, Satsuki Yamane, Jose Victorio Salazar Luces, Ankit A. Ravankar, and Yasuhisa Hirata, in IEEE Robotics and Automation Letters (IEEE RA-L), vol. 10, no. 7, pp. 7198-7205, July 2025, doi: 10.1109/LRA.2025.3575646
  2. ***Target specific multi-image 3D scrambling algorithm for security cameras***, Abhijeet Ravankar, Arpit Rawankar, and Ankit A. Ravankar, in Artificial Life and Robotics, Springer, pp. 1-11, May 2025, doi: https://doi.org/10.1007/s10015-025-01033-1

3. ***Development of a brain–machine interface based robot navigation system for disabled people***, Abhijeet Ravankar, Arpit Rawankar, and Ankit A. Ravankar, in Artificial Life and Robotics, Springer, pp. 1-9, May 2025, doi: https://doi.org/10.1007/s10015-025-01024-2
4. ***Task Planning for a Factory Robot Using Large Language Model***, Yosuke Tsuhima, Shu Yamamoto, Ankit A.Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata, in IEEE Robotics and Automation Letters (IEEE RA-L), vol. 10, no. 3, pp. 2383-2390, March 2025, doi: 10.1109/LRA.2025.3531153.

- **2024**

5. ***Concept and Prototype Development of Adaptive Touch Walking Support Robot for Maximizing Human Physical Potential***, Junya Terayama, Ankit A.Ravankar, Jose Victorio Salazar Luces, Seyed Amir Trafrishi and Yasuhisa Hirata, in IEEE Robotics and Automation Letters (IEEE RA-L), vol. 9, no. 8, pp. 6935-6942, Aug. 2024, doi: 10.1109/LRA.2024.3415928.
6. ***Semantic-Based Multi-Object Search Optimization in Service Robots Using Probabilistic and Contextual Priors***, Akash Chikhalikar, Ankit A.Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata, in IEEE Access, vol. 12, pp. 113151-113164, 2024, doi: 10.1109/ACCESS.2024.3444478.
7. ***Automatic inspection of wheel surface defects using a combination of laser sensors and machine vision***, Takeshi Emoto, Ankit Ravankar, Abhijeet Ravankar, Takanori Emaru, Yukinori Kobayashi, SICE Journal of Control, Measurement, and System Integration, 17(1), 57–66. (2024) https://doi.org/10.1080/18824889.2024.2314800.
8. ***A method for detecting wear and damage on railcar wheel tread surface using a combination of laser measurement and machine vision***, Takeshi Emoto, Takanori Emaru, Ankit Ravankar, Abhijeet Ravankar, Yukinori Kobayashi, JSME Mechanical Engineering Journal, Vol. 11 (3), p. 23-00352, 2024, https://doi.org/10.1299/mej.23-00352.

- **2023**

9. ***Video stabilization algorithm for field robots in uneven terrain***, Abhijeet Ravankar, Arpit Rawankar, and Ankit A. Ravankar, Artificial Life and Robotics, vol. 28, pp 502–508 (2023). https://doi.org/10.1007/s10015-023-00883-x.
10. ***Real-time monitoring of elderly people through computer vision***, Abhijeet Ravankar, Ankit A. Ravankar and Arpit Rawankar, Artificial Life and Robotics, vol. 28, pp 496–501 (2023). https://doi.org/10.1007/s10015-023-00882-y.
11. ***Running Guidance for Visually Impaired People Using Sensory Augmentation Technology Based Robotic System***, Z. Liao, J. V. S. Luces, A A. Ravankar and Y. Hirata, IEEE Robotics and Automation Letters, vol. 8, no. 9, pp. 5323-5330, Sept. 2023, doi: 10.1109/LRA.2023.3294718.
12. ***A Performance Evaluation of Overground Gait Training With a Mobile Body Weight Support System Using Wearable Sensors***, Z. Dong, J. V. S. Luces, A A. Ravankar, S. A. Tafrishi and Y. Hirata, in IEEE Sensors Journal, vol. 23, no. 11, pp. 12209-12223, doi: 10.1109/JSEN.2023.3269031.
13. ***CARE: Cooperation of AI-Robot Enablers***, Ankit A. Ravankar, Seyed A. Tafrishi, Jose V. L. Salazar, Fumi Seto, and Yasuhisa Hirata, IEEE Robotics & Automation Magazine 30, no. 1, pp 8-23, (March 2023),doi: 10.1109/MRA.2022.3223256. (**Selected as IEEE RAM Featured Paper 2023**)

- **2022**

14. ***Real-time Monitoring of Elderly People through Computer Vision***, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar, Artificial Life and Robotic, Springer.

- **2021**

15. ***Multi-Modal Sensor Fusion-Based Semantic Segmentation for Snow Driving Scenarios***, Sirawich Vachmanus, Ankit A. Ravankar, Takanori Emaru, and Yukinori Kobayashi, IEEE Sensors Journal, vol. 21, no. 15, pp. 16839-16851; (https://doi: 10.1109/JSEN.2021.3077029.)
16. ***Autonomous and Safe Navigation of Mobile Robots in Vineyard with Smooth Collision Avoidance***, Abhijeet Ravankar*, Ankit A. Ravankar*, Arpit Rawankar, and Yohei Hoshino, Agriculture. 2021; 11(10):954; (https://doi.org/10.3390/agriculture11100954)(***Equal Contribution**)

- **2020**

17. ***HPPRM: Hybrid Potential Based Probabilistic Roadmap Algorithm For Improved Dynamic Path***

Planning Of Mobile Robots, Ankit A. Ravankar*, Abhijeet Ravankar, Takanori Emaru and Yukinori Kobayashi, IEEE ACCESS, Vol. 8., pp. 221743-221766, 2020; (https://doi.org/10.1109/ACCESS.2020.3043333)

18. ***Autonomous VTOL-UAV Docking System for Heterogeneous Multi-Robot Team***, Eduardo Narvaez, Ankit A. Ravankar*, Takanori Emaru and Yukinori Kobayashi, IEEE Transactions on Instrumentation & Measurement, vol. 70, pp. 1-18, 2020 (***Joint First Author**); (https://doi.org/10.1109/TIM.2020.3039649)
19. ***Multi-robot path planning for smart access of distributed charging points in map***, Abhijeet Ravankar, Ankit A. Ravankar, Michiko Watanabe, Yohei Hoshino, and Arpit Rawankar, Artificial Life and Robotics, 2020, (https://doi.org/10.1007/s10015-020-00612-8)
20. ***Transient Virtual Obstacles for Safe Robot Navigation in Indoor Environments***, Abhijeet Ravankar, Ankit A. Ravankar, Yohei Hoshino, Michiko Watanabe, and Arpit Rawankar, Information Engineering Express, 2020, Vol. 6(1), 59-69; http://www.iaiai.org/journals/index.php/IEE/issue/view/51
21. ***Measuring Student Learning Outcomes in Introductory Project Management Course in Graduate Schools***, Ankit A. Ravankar, Abhijeet Ravankar, and Shotaro Imai, International Journal of Institutional Research and Management, 2020, Vol. 4(1), 66-86; http://hdl.handle.net/2115/78726
22. ***Development of a Low-Cost Semantic Monitoring System for Vineyards Using Autonomous Robots***, Abhijeet Ravankar*, Ankit A. Ravankar*, Michiko Watanabe, Yohei Hoshino, and Arpit Rawankar, Agriculture, 2020, Vol. 10(5), 182; https://doi.org/10.3390/agriculture10050182(***Equal Contribution**)
23. ***Safe mobile robot navigation in human-centered environments using a heat map-based path planner***, Abhijeet Ravankar, Ankit A. Ravankar, Yohei Hoshino, Michiko Watanabe, and Yukinori Kobayashi, Artificial Life and Robotics, 2020, Vol. 25, pp-264-272; https://doi.org/10.1007/s10015-020-00591-w
24. ***Google Earth Engine for the Detection of Soiling on Photovoltaic Solar Panels in Arid Environments***, Hitesh Supe, Ram Avtar, Deepak Singh, Ankita Gupta, Ali P Yunus, Jie Dou, Ankit A. Ravankar, Geetha Mohan, Saroj Kumar Chapagain, Vivek Sharma, Chander Kumar Singh, Olga Tutubalina, Ali Kharrazi, Remote Sensing 2020, Vol. 12(9), 1466; https://doi.org/10.3390/rs12091466
25. ***Line Segment Extraction and Polyline Mapping for Mobile Robots in Indoor Structured Environments Using Range Sensors***, Ankit A. Ravankar, Abhijeet Ravankar, Takanori Emaru, and Yukinori Kobayashi, SICE Journal of Control, Measurement, and System Integration 2020, Vol. 13(3), pp-138-147; https://doi.org/10.9746/jcmsi.13.138(**SICE Best Journal Paper Award 2020**)

- **2019**

26. ***ITC: Infused Tangential Curves for Smooth 2D and 3D Navigation of Mbile Robots***, Abhijeet Ravankar*, Ankit A. Ravankar*, Yohei Hoshino, and Yukinori Kobayashi, Applied Sciences 2019, Vol. 9(13), 2753; https://doi.org/10.3390/s19204384(***Equal Contribution**)
27. ***On Sharing Spatial Data with Uncertainty Integration Amongst Multiple Robots Having Different Maps***, Abhijeet Ravankar*, Ankit A. Ravankar*, Arpit Rawankar, Yohei Hoshino, and Yukinori Kobayashi, Sensors 2019, Vol. 19(20), 4384; https://doi.org/10.3390/app9132753(***Equal Contribution**)
28. ***A Novel Approach for Lidar-based Robot Localization in a Scale-drifted Map Constructed using Monocular SLAM***, Wang Su, Yukinori Kobayashi, Ankit A. Ravankar, Abhijeet Ravankar, and Takanori Emaru, Sensors 2019, Vol. 19(10), 2230; https://doi.org/10.3390/s19102230
29. ***Bio-inspired Structure and Behavior of Self-recovery Quadruped Robot with a Limited Number of Functional Legs***, Sarun Chattunyakit, Yukinori Kobayashi, Takanori Emaru, and Ankit A. Ravankar, Applied Sciences 2019, Vol. 9(4); https://doi.org/10.3390/app9040799.

- **2018**

30. ***Path Smoothing Techniques in Robot Navigation: State-of-the-Art, Current and Future Challenges***,

Abhijeet Ravankar*, Ankit A. Ravankar*, Yukinori Kobayashi, Yohei Hoshino, and Chao-Chung Peng, Sensors 2018, Vol. 18(9); https://doi.org/10.3390/s18093170.(***Equal Contribution**)

31. ***Hitchhiking Based Symbiotic Multi-Robot Navigation in Sensor Networks***, Abhijeet Ravankar*, Ankit A. Ravankar*, Yukinori Kobayasi, Yohei Hoshino, Chao-Chung Peng and Michiko Watanabe, Robotics 2018, 7(3), 37; https://doi.org/10.3390/robotics7030037(***Equal Contribution**)
32. ***A Single LiDAR-Based Feature Fusion Indoor Localization Algorithm***, Yun-Ting Wang, Chao-Chung Peng, Ankit A. Ravankar, and Abhijeet Ravankar, Sensors 2018, Vol. 18(4), 1294; https://doi:10.3390/s18041294

- **2017**

33. ***Hitchhiking Robots: A Collaborative Approach for Efficient Multi-Robot Navigation in Indoor Environments***, Abhijeet Ravankar*, Ankit A. Ravankar*, Yukinori Kobayashi, and Takanori Emaru, Sensors 2017, Vol. 17(8), 1581; https://doi:10.3390/s17081878(***Equal Contribution**)
34. ***Symbiotic Navigation in Multi-Robot Systems with Remote Obstacle Knowledge Sharing***, Abhijeet Ravankar*, Ankit A. Ravankar*, Yukinori Kobayashi, and Takanori Emaru, Sensors 2017, Vol. 17(7), 1581; https://doi:10.3390/s17071581(***Equal Contribution**)
35. ***Effect of Instructor's Actions and Attitudes on Student's Motivation and Discussion Process in TBL Class for Graduate Students***, Shotaro Imai, Ankit A. Ravankar, Michiyo Shimamura, Taichi Takasuka, Go Chiba, Yasuhiro Yamanaka, International Journal of Institutional Research and Management, Vol. 1(2), Pg. 17-35, 2017
36. ***Hitchhiking robots: A collaborative approach for efficient multi-robot navigation in indoor environments***, Abhijeet Ravankar*, Ankit A. Ravankar*, Yukinori Kobayashi, and Takanori Emaru, Sensors 2017, Vol. 17(8), pp p.1878; https://doi.org/10.3390/s17081878(***Equal Contribution**)
37. ***Problem-based Learning and Problem Finding Among University Graduate Students***, Ankit A. Ravankar, Shotaro Imai, Michiyo Shimamura, Go Chiba, Taichi Takasuka, Journal of Higher Education and Lifelong Learning, Vol. 24, Pg 9-20, 2017; https://doi.org/10.14943/J.HighEdu.24.9.

- **2016**

38. ***Avoiding blind leading the blind: Uncertainty integration in virtual pheromone deposition by robots***, Abhijeet Ravankar, Ankit A. Ravankar, Yukinori Kobayashi, Takanori Emaru, International Journal of Advanced Robotic Systems, Sage Publications, Vol. 13(6), 2016; https://doi.org/10.1177/1729881416666088.
39. ***On a Bio-Inspired Hybrid Pheromone Signalling for Efficient Map Exploration of Multiple Mobile Service Robots***, Abhijeet Ravankar, Ankit A. Ravankar, Yukinori Kobayashi, Takanori Emaru, Journal of Artificial Life and Robotics, Vol. 21(2), Pg. 221–231, Springer, 2016; https://doi.org/10.1007/s10015-016-0279-4.
40. ***On a Hopping-points SVD and Hough Transform Based Line Detection Algorithm for Robot Localization and Mapping***, Abhijeet Ravankar, Ankit A. Ravankar, Yukinori Kobayashi and Takanori Emaru, International Journal of Advanced Robotic Systems, Vol. 13(3), Pg. 98, 2016; https://doi.org/10.5772/63540.
41. ***SHP: Smooth Hypocycloidal Paths and Decoupled Multi-Robot Path Planning with Collision Avoidance***, Abhijeet Ravankar, Ankit A. Ravankar, Yukinori Kobayashi and Takanori Emaru, International Journal of Advanced Robotic Systems, Vol. 13(3), Pg. 133, Sage Publications, 2016; https://doi.org/10.5772/63458.

- **2015**

42. ***Algorithms and a Framework for Indoor Robot Mapping in a Noisy Environment using Clustering in Spatial and Hough Domains***, Ankit A. Ravankar, Yohei Hoshino, Abhijeet Ravankar, Jixin Lv, Takanori Emaru and Yukinori Kobayashi, International Journal of Advanced Robotic Systems, 2015, Vol. 12(27); Sage Publications; doi: doi.org/10.5772/59992.
43. ***Indoor Slope and Edge Detection by using 2D EKF-SLAM with Orthogonal Assumptions***, Jixin Lv, Yukinori Kobayashi, Ankit A. Ravankar, Takanori Emaru, International Journal of Advanced Robotic Systems, 2015, Vol. 12(44), Sage Publications; https://doi.org/10.5772/60407.

- **2014**

44. ***Straight Line Segments Extraction and EKF-SLAM in Indoor Environment***, Jixin Lv, Yukinori Kobayashi,

Ankit A. Ravankar, Takanori Emaru, Journal of Automation and Control Engineering, Vol2(3), Pg.270; https://10.12720/joace.2.3.270-276.

- **2012**

45. ***Robot Mapping Using k-means Clustering Of Laser Range Sensor Data***, Ankit A. Ravankar, Yohei Hoshino, Takanori Emaru, and Yukinori Kobayshi, Bulletin of Networking, Computing, Systems, and Software Vol 1 No.1, pp.9-12.

REFEREED CONFERENCE PROCEEDINGS (INTERNATIONAL)

- **2025**

1. ***Context-Aware Risk Estimation in Home Environments: A Probabilistic Framework for Service Robots*** Sena Ishii, Akash K. Chikhalikar, Ankit A. Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata, in Proceedings of 34th IEEE International Conference on Robot and Human Interactive Communication (IEEE RO-MAN25), Eindhoven, August 25-29, 2025 (ACCEPTED).
2. ***A Standing Support Mobility Robot for Enhancing Independence in Elderly Daily Living*** Ricardo Manriquez-Cisterna,Ankit A. Ravankar, Jose Victorio Salazar Luces, Takuro Hatsukari, and Yasuhisa Hirata, in Proceedings of 34th IEEE International Conference on Robot and Human Interactive Communication (IEEE RO-MAN25), Eindhoven, August 25-29, 2025 (ACCEPTED).
3. ***An AI-Based Shopping Assistant System to Support the Visually Impaired*** Larissa Rika de Souza Shibata, Ankit A. Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata, in Proceedings of 2025 SICE Festival with Annual Conference, September 9-12, 2025, Chiang Mai, Thailand. (ACCEPTED).
4. ***Delivery System for Ceiling-Rail-Based Assistive Robot: Enhancing Accessibility of Yorisoi Robot for Independent Mobility Support*** Shota Murase, Ricardo Manríquez-Cisterna, Ankit A. Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata, in Proceedings of 2025 SICE Festival with Annual Conference, September 9-12, 2025, Chiang Mai, Thailand. (ACCEPTED).
5. ***Somnomat Care: A Novel Robotic Bed for Vestibular Stimulation in Nursing Homes*** , Ricardo Manriquez-Cisterna, Oriella Gnarra, Ankit A. Ravankar, Alexander Breuss, Tatsuya Yoshimi, Jose Victorio Salazar Luces, Diego Paez-Granados, Kenji Kato, Robert Riener, and Yasuhisa Hirata, in 2025 International Conference on Rehabilitation Robotics (ICORR), IL, USA, May12-16, 2025.
6. ***Vibrotactile Feedback for Training Tempo and Stroke Length in Golf Putting***, Jose Victorio Salazar Luces, Ankit A. Ravankar, Yasuhisa Hirata, in 2025 IEEE/SICE International Symposium on System Integration (SII), Munich, Germany, 2025, pp. 127-133, doi: 10.1109/SII59315.2025.10870998.
7. ***Open Vocabulary Object Search Utilizing Large Language Models and Fuzzy Inferencing***, Akash Chikhalikar, Ankit A. Ravankar, Jose Victorio Salazar Luces, and Yasuhisa Hirata, in 2025 IEEE/SICE International Symposium on System Integration (SII), Munich, Germany, 2025, pp. 345-351, doi: 10.1109/SII59315.2025.10870891. (**IEEE SII Best Student Paper Award 2025**)

- **2024**

8. ***Development of a Detachable Body Weight Support Robotic Rollator with Wearable Sensors to Assist Overground Gait Rehabilitation***, Zhonghao Dong, Jose Victorio Salazar Luces, Ankit A. Ravankar, Yasuhisa Hirata, in 6th International Conference on NeuroRehabilitation (ICNR2024), La Granja, Spain, November 5-November 8, 2024.
9. ***A B-Spline Approach for Improved Environmental Awareness in Virtual Walking System Using Avatar Robot***, Alessandra Miuccio, Ricardo Manriquez-Cisterna, Ankit A. Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata, and Paolo Rocco, in 2024 33rd IEEE International Conference on Robot and Human Interactive Communication (ROMAN), Pasadena, California, USA, 2024.
10. ***Enhancing Manipulator Flexibility: Real-time Positional Control for Variable Assembly Environments using AprilTag Markers and Edge Detection***, Kamogelo Teddy Theodore Moyo, Jose Victorio Salazar Luces, Ankit A.Ravankar, Yasuhisa Hirata, and Shota Morozumi, in 2024 IEEE 20th International Conference on Automation Science and Engineering (CASE), Bari, Italy, 2024.

11. ***Automatic Recognition of Railcar Nameplate for Condition Monitoring***, Takeshi Emoto, Ankit A. Ravankar, Abhijeet Ravankar, Takanori Emaru, Yukinori Kobayashi, in 2024 The SICE Festival 2024 with Annual Conference, Kochi, Japan.
12. ***Real-Time Marker-Based Monocular Autonomous Docking in Semi-Unstructured Indoor Environments***, Sebastian Chinchilla, Takumi Saito, Ryosuke Oikawa, Tomoaki Yamada, Naoto Toshiki, Satsuki Yamane, Jose Salazar, Ankit A Ravankar, Yasuhisa Hirata, 2024 IEEE/SICE International Symposium on System Integration (SII), Ha Long, Vietnam, 2024, pp. 1561-1568, doi: 10.1109/SII58957.2024.10417484.
13. ***Semantic Scene Understanding and Region Classification for Navigation of Service Robots in Care Scenarios***, Ankit A Ravankar, Akash Chikalikar, Jose Salazar, Abhijeet Ravankar, and Yasuhisa Hirata, in The Twenty-Ninth International Symposium on Artificial Life and Robotics 2024 (AROB 29th 2024), B-Con Plaza, Beppu, Japan, January 24-26, 2024.
14. ***Synergizing Multi-Robot Assistive Care: An IoT-Driven Framework for Elderly Support in a Simulated Smart Living Lab***, Ankit A Ravankar, Jose Salazar, and Yasuhisa Hirata, in The Twenty-Ninth International Symposium on Artificial Life and Robotics 2024 (AROB 29th 2024), B-Con Plaza, Beppu, Japan, January 24-26, 2024.
15. ***Distributed Multi-agent Mapping and Localization For Enhanced Autonomous Navigation***, Ankit A Ravankar, in the proceedings of The International Conference on Communication, Computing, and Data Security-ICCCDS 2024, Mumbai, Feb 21 2024. (**Conference Best Paper Award**)
16. ***Safety for Human-Robot Interaction with a Shared Autonomy***, Seyed A Tafrishi, Ankit A Ravankar, Yasuhisa Hirata, In: Spezi E. & Bray M (eds.), Proceedings of the Cardiff University Engineering Research Conference 2023. Cardiff: Cardiff University Press. Vol (4), pages 4, DOI: https://doi.org/10.18573/conf1.

- **2023**

17. ***Wheel surface defect detection method using laser sensor and machine vision***, Takeshi Emoto, Ankit A Ravankar, Abhijeet Ravankar, Takanori Emaru, Yukinori Kobayashi, In 2023 62nd Annual Conference of the Society of Instrument and Control Engineers (SICE), Tsu, Japan, 2023, pp. 1194-1199, doi: 10.23919/SICE59929.2023.10354134.
18. ***Path-Following Guidance for Powered Wheelchair Users Using Mixed-Reality Technology with Shared Control Policy***, Zhenyu Liao, Jose Salazar, Ankit Ravankar, Sebastian Chinchilla, Eric Monacelli, Yasuhisa Hirata, In 2022 IEEE International Conference on Cyborg and Bionic Systems (CBS), Wuhan, China, 2023, pp. 380-385, doi: 10.1109/CBS55922.2023.10115329.
19. ***An object-oriented navigation strategy for service robots leveraging semantic information***, Akash Chikhalikar, Ankit A Ravankar, Jose Victorio Salazar Luces, Seyed Amir Tafrishi, Yasuhisa Hirata, In 2023 IEEE/SICE International Symposium on System Integration (SII), Atlanta, GA, USA, 2023, pp. 1-6, doi: 10.1109/SII55687.2023.10039409.
20. ***Nursing care teaching system based on mixed reality for effective caregiver-patient interaction***, Goro Aoki, Jose Victorio Salazar Luces, Seyed Amir Tafrishi, Ankit A Ravankar, Yasuhisa Hirata, In 2023 IEEE/SICE International Symposium on System Integration (SII), Atlanta, GA, USA, 2023, pp. 1-6, doi: 10.1109/SII55687.2023.10039419.

- **2022**

21. ***PSM: A Predictive Safety Model for Body Motion Based On the Spring-Damper Pendulum***, S. A. Tafrishi, A. A. Ravankar, and Y. Hirata, International Conference on Intelligent Robots and Systems (IROS), 2022, pp. pp. 6657-6664,
22. ***A Novel Assistive Controller Based on Differential Geometry for Users of the Differential-Drive Wheeled Mobile Robots***, S. A. Tafrishi, A. A. Ravankar, J. V. S. Luces, and Y. Hirata, 2022 International Conference on Robotics and Automation (ICRA), 2022, pp. 5755-5761, doi:10.1109/ICRA46639.2022.9811593.
23. ***Immersive Virtual Walking System Using an Avatar Robot***, K. Promsutipong, J. V. S. Luces, A. A. Ravankar, S. A. Tafrishi, and Y. Hirata, 2022 International Conference on Robotics and Automation (ICRA), 2022, pp. 9325-9331, doi: 10.1109/ICRA46639.2022.9811588.
24. ***Cooperation of Assistive Robots to Improve Productivity in the Nursing Care Field***, Y. Hirata, J. V. S.

Luces, A. A. Ravankar, and S. A. Tafrishi, The International Symposium on Robotics Research (ISRR 2022) September 25-30, 2022, Geneva, Switzerland.

25. ***Automatic Dimensional Inspection System of Railcar Wheelset for Condition Monitoring***, T. Emoto, A. A. Ravankar, A. Ravankar, T. Emaru and Y. Kobayashi, 2022 61st Annual Conference of the Society of Instrument and Control Engineers (SICE), 2022, pp. 899-904, doi: 10.23919/SICE56594.2022.9905812.
26. ***Driving Assistance for Personal Mobility Considering Sense of Agency Based on User's Destination Estimation***, A. Okamoto, Y. Tamura, A. A. Ravankar, Y. Hirata, 2022 Proceedings of the 27th Robotics Symposia, 27, pp. 126-128.

- **2021**

27. ***Automatic Inspection of Railcar Wheels Using Laser and Image Sensor***, T. Emoto, A. A. Ravankar, A. Ravankar, T. Emaru and Y. Kobayashi, 2021 60th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE), 2021, pp. 1282-1287
28. ***An Evaluation of RGB-Thermal Image Segmentation for Snowy Road Environment***, S. Vachmanus, A. A. Ravankar, T. Emaru and Y. Kobayashi, 2021 IEEE International Conference on Mechatronics and Automation (ICMA), 2021, pp. 224-230; https://doi.org/10.1109/ICMA52036.2021.9512708.
29. ***Monocular Visual-inertial Localization in a Point Cloud Map Using Feature-to-Distribution Registration***, S. Wang, A. A. Ravankar, A. Ravankar, T. Emaru and Y. Kobayashi, 2021 IEEE/SICE International Symposium on System Integration (SII), 2021, pp. 720-726; https://doi.org/10.1109/IEEECONF49454.2021.9382659.
30. ***Evaluation of an avatar robot with a physically immersive telepresence***, Koen Hertenberg, Jose Victorio Salazar Luces, Seyed Amir Tafrishi, Ankit A Ravankar, Yasuhisa Hirata, 2021 IEEE International Conference on Robotics and Biomimetics (ROBIO), Sanya, China, 2021, pp. 99-104, doi: 10.1109/ROBIO54168.2021.9739326.
31. ***Monocular Visual-inertial Localization in a Point Cloud Map Using Feature-to-Distribution Registration***, S. Wang, A. A. Ravankar, A. Ravankar, T. Emaru and Y. Kobayashi, 2021 IEEE/SICE International Symposium on System Integration (SII), 2021, pp. 720-726; https://doi.org/10.1109/IEEECONF49454.2021.9382659.
32. ***Real-time Interpolation Method For Sparse LiDAR Point Cloud Using RGB Camera***, T. Hasegawa, T. Emaru and A. A. Ravankar, 2021 IEEE/SICE International Symposium on System Integration (SII), 2021, pp. 421-425; https://doi.org/10.1109/IEEECONF49454.2021.9382760.
33. ***Improved Scan Matching Performance in Snowy Environments Using Semantic Segmentation***, M. Obuchi, T. Emaru and A. A. Ravankar, 2021 IEEE/SICE International Symposium on System Integration (SII), 2021, pp. 702-703; https://doi.org/10.1109/IEEECONF49454.2021.9382713.
34. ***SVM based Pedestrian Detection System for Sidewalk Snow Removing Machines***, Y. Sasaki, T. Emaru and A. A. Ravankar, 2021 IEEE/SICE International Symposium on System Integration (SII), 2021, pp. 700-701; https://doi.org/10.1109/IEEECONF49454.2021.9382618.
35. ***Dynamic Motion Planning for Mobile Robots using Improved Artificial Potential Field Method***, A. A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, The Twenty-Sixth International Symposium on Artificial Life and Robotics (AROB26th2021), Beppu, Japan, Jan. 21-14, 2021.
36. ***Behavior Recognition of Patients Through Computer Vision***, A. Ravankar, A. A. Ravankar, M. Watanabe, Y. Hoshino, A. Rawankar, The Twenty-Sixth International Symposium on Artificial Life and Robotics (AROB26th2021), Beppu, Japan, Jan. 21-14, 2021.

- **2020**

37. ***Dynamics Modelling and Parameter Identification of a Reaction Wheel Based Pendulum***, C. Y. Su, C. C. Peng, A. A. Ravankar and A. Ravankar, 2020 Fourth IEEE International Conference on Robotic Computing (IRC), 2020, pp. 271-274; https://doi.org/10.1109/IRC.2020.00049.
38. ***Semantic Image Segmentation on Snow Driving Scenarios***, Y. Lei, T. Emaru, A. A. Ravankar, Y.

Kobayashi and S. Wang, 2020 IEEE International Conference on Mechatronics and Automation (ICMA), 2020, pp. 1094-1100;
https://doi.org/10.1109/ICMA49215.2020.9233538.

39. ***Development of Robust Ridge Detection Method and Control System for Autonomous Navigation of Mobile Robot in Agricultural Farm***, S. Fujita, T. Emaru, A. A. Ravankar, and Y. Kobayashi, ROMANSY 23 Symposium on Robot Design, Dynamics and Control. ROMANSY 2020,vol 601, Sapporo, Japan. https://doi.org/10.1007/978-3-030-58380-4_3
40. ***Semantic Segmentation for Road Surface Detection in Snowy Environment***, S. Vachmanus, A. A. Ravankar, T. Emaru and Y. Kobayashi, 2020 59th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE), 2020, pp. 1381-1386; https://doi.org/10.23919/SICE48898.2020.9240402.
41. ***Estimation of Tree Diameter at Breast Height using Stereo Camera by Drone Surveying and Mobile Scanning Methods***, V. Trairattanapa, A. A. Ravankar and T. Emaru, 2020 59th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE), 2020, pp. 946-951;
https://doi.org/10.23919/SICE48898.2020.9240363.
42. ***Path Planning for Service Robots in Continuous Operation***, A. Ravankar, A. A. Ravankar, Y. Hoshino, M. Watanabe, The Twenty-Fifth International Symposium on Artificial Life and Robotics (AROB 25th 2020), GS14-6, Pages 391-396, (CDROM), ISBN978-4-9907582-6-4, B-Con Plaza, Beppu, Japan, January 22-24, 2020. (**Best Paper Award**)
43. ***A Robust SLAM System for Complex Environments using Geometric Features and Visual Inertial Navigation***, A. A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, The Twenty-Fifth International Symposium on Artificial Life and Robotics (AROB 25th 2020), GS19-3, Pages 514-519, (CDROM), ISBN978-4-9907582-6-4, B-Con Plaza, Beppu, Japan, January 22-24, 2020.

- **2019**

44. ***An Efficient Algorithm for Cleaning Robots Using Vision Sensors***, A. Ravankar, A. A. Ravankar, M. Watanabe, Y. Hoshino, 6th International Electronic Conference on Sensors and Applications, 14 November 2019, Vol.42, No.1, Pages.45
45. ***Visual-aided Multi-robot Mapping and Navigation using Topological Features***, A. A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, 6th International Electronic Conference on Sensors and Applications, 14 November 2019, Vol.42, No.1, Pages.68
46. ***A Semi-active Multi-mode Vibration Damping Technique to Study the Impact of Vertical Flexural Vibration Damping of a Railway Car-body Floor on Ride Comfort***, Das S., Gupta A., Ono S., Kobayashi Y., Emaru T., and Ravankar A.A., World Congress on Railway Research (WCRR), Oct 28 – Nov. 1, 2019, Tokyo.
47. ***On Autonomous Navigation in Vineyards with Lidar Information***, Ravankar A., Ravankar A.A., Hoshino Y., Kobayashi Y., 2019 IEEE 58th Annual Conference of the Society of Instrumentation and Control Engineers of Japan (SICE), Page.229-232, September 10-13, 2019, Hiroshima, Japan.
48. ***Multi-modal Vibration Control of a Double Shell Railway Car-Body Model using Passive Piezo-electric Shunt Circuit***, Das S., Gupta A., Ono S., Kobayashi Y., Emaru T., and Ravankar A.A., 2019 IEEE 12th Asian Control Conference (ASCC), pp. 772-777, 9-12 June 2019, Kitakyushu, Japan.
49. ***Managing the Project: The Essential Need for Project Management Training and Education in Graduate Schools***, Ravankar A.A., Imai S., Ravankar A., IEEE 8th International Congress on Advanced Applied Informatics (IIAI-AAI), Toyama, Japan, 2019, pp. 420-425. https://doi.org/10.1109/IIAI-AAI.2019.00092. (**Honorable Mention Award**)
50. ***Virtual Obstacles for Safe Mobile Robot Navigation***, Ravankar A., Ravankar A.A., Hoshino Y., Kobayashi Y. IEEE 8th International Congress on Advanced Applied Informatics (IIAI-AAI), Toyama, Japan, 2019, pp. 552-555. https://doi.org/10.1109/IIAI-AAI.2019.00118.
51. ***HMRP: Heat Map based Robot Path Planner for Safe Navigation in Human Centric Environments***, Ravankar A., Ravankar A.A., Watanabe M., Hoshino Y., The 24th International Symposium on Artificial Life and Robotics (AROB 24th 2019), GS 18-3, Page 472-477, B-Con Plaza, Beppu, Japan, January 23-25, 2019.

52. ***Real-time Visual Graph-Based Navigation for Multi-Robot System***, Ravankar A.A., Ravankar A., Emaru T., Kobayashi Y., The 24th International Symposium on Artificial Life and Robotics (AROB 24th 2019), GS17-1, Page 440-445, B-Con Plaza, Beppu, Japan, January 23-25, 2019.

- **2018**

53. ***Aerial Robot Model based design and verification of the single and multi-agent inspection application development***, Yamaguchi P, Sakuma M., Ueno T., Karolonek F., Uhl T., Emaru T., Kobayashi Y., The 14th International Conference on Motion and Vibration Control (MOVIC18), August 5-8, 2018, Daejeon Convention Center, S.Korea.
54. ***Localization with Laser Range Finder in a Metrically Inconsistent Map from Monocular SLAM***, Wang S., Kobayashi Y., Ravankar A., Ravankar A.A., Emaru T. 2018 IEEE International Conference on Robotics and Biomimetics (ROBIO), 2018, pp. 796-801; https://doi.org/10.1109/ROBIO.2018.8665306.
55. ***A Bio-Inspired Algorithm for Autonomous Task Coordination of Multiple Mobile Robots***, Ravankar A.,Ravankar A.A., Emaru T., Kobayashi Y., The Proceedings of 5th International Electronic Conference on Sensors and Applications, Vol.4, No.1, Pages 1-7, 15–30 November 2018.
56. ***Autonomous Mapping and Exploration with Unmanned Aerial Vehicles Using Low Cost Sensors***, Ravankar A.A., Ravankar A., Emaru T., Kobayashi Y., The Proceedings of 5th International Electronic Conference on Sensors and Applications, Vol.4, No.1, Page 44-51, 15–30 November 2018.
57. ***Autonomous Mobile Robot Mapping and Navigation using Topological and Semantic Information***, Ankit A. Ravankar, Abhijeet Ravankar, Yukinori Kobayashi, Takanori Emaru, Proceedings of the 23rd International Symposium on Artificial Life and Robotics, ISAROB, January 18-20, Beppu, Japan, 2018 (**Young Author Award**)
58. ***Towards Better Problem Finding and Creativity in Graduate School Education: A Case Study of Nitobe School Program***, Ravankar A.A., Imai S., Ravankar A., Agatsuma T., Kato T., Takasuka T., Tsuji T., Shigetomi K.K., Saito K., 7th International Congress on Advanced Applied Informatics (IIAI-AAI), Yonago, Japan, 2018, pp. 414-418. https://doi.org/10.1109/IIAI-AAI.2018.00088.
59. ***Real-time multi-robot path planning revisited as a caching problem***, Ravankar A., Ravankar A.A., Kobayashi Y. Peng CC., Emaru T., 2018 IEEE International Conference on Applied System Invention (ICASI), Chiba, Japan, 2018, pp. 350-353. https://doi.org/10.1109/ICASI.2018.8394606.
60. ***Task coordination for multiple mobile robots considering semantic and topological information***, Ravankar A.A., Ravankar A., Kobayashi Y. Peng CC., Emaru T., 2018 IEEE International Conference on Applied System Invention (ICASI), Chiba, 2018, pp. 1088-1091. https://doi.org/10.1109/ICASI.2018.8394468.
61. ***Autonomous Mobile Robot Mapping and Navigation using Topological and Semantic Information***, Ravankar A.A., Ravankar A., Kobayashi Y. Peng CC., Emaru T., Proceedings of the 23rd International Symposium on Artificial Life and Robotics, AROB, January 18-20, Beppu, Japan, 2018.

- **2017**

62. ***UAV pose estimation using IR and RGB cameras***, Wang S., Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., 2017 IEEE/SICE International Symposium on System Integration (SII), (pp. 151-156). IEEE, 11-14 December 2017, Taipei, Taiwan. https://doi.org/10.1109/SII.2017.8279204.
63. ***Vision Based Autonomous Docking of VTOL UAV using a Mobile Robot Manipulator***, Narvaez E., Ravankar A.A., Ravankar A., Kobayashi Y., Emaru T. 2017 IEEE/SICE International Symposium on System Integration (SII), (pp. 157-163). IEEE, 11-14 December 2017, Taipei, Taiwan. https://doi.org/10.1109/SII.2017.8279205.
64. ***Optimal Robot Path Selection Using Fuzzy Analytical Hierarchical Process***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., In Proceedings of the 4th International Electronic Conference on Sensors and Applications, Vol.2, No.3, 15–30 November 2017.

65. ***Can Robots Help Each Other To Plan Optimal Paths in Dynamic Maps?***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., Proceedings of the SICE Annual Conference (SICE), IEEE, Kanazawa, Sep 19-22, 2017. pp.317-320.
66. ***A Hybrid Topological Mapping and Navigation Method for Large Area Robot Mapping***, Ravankar A.A., Ravankar A., Kobayashi Y., Emaru T., Proceedings of the SICE Annual Conference (SICE), IEEE, Kanazawa, Sep 19-22, 2017. pp. 1104-1107.
67. ***Low-cost Mobile Platform for ROS***, Ravankar A.A., Ravankar A., Kobayashi Y., Emaru T., The Robotics and Mechatronics Conference 2017, (ROBOMECH2017), Proceedings of the Japan Society of Mechanical Engineers, pp. 1P1-G09.
68. ***Inter-Robot Learning in Multi-Robot System***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., The Robotics and Mechatronics Conference 2017, (ROBOMECH2017), Proceedings of the Japan Society of Mechanical Engineers, pp. 2P1-F04.

- **2016**

69. ***A method of low-cost IMU calibration and alignment***, Lv J., Ravankar A.A., Kobayashi Y., Emaru T., 2016 IEEE/SICE International Symposium on System Integration (SII) (pp. 373-378), December 13-15, 2016, Sapporo, Japan. https://doi.org/10.1109/SII.2016.7844027.
70. ***Mapping of pier substructure using UAV***, Sakuma M., Emaru T., Kobayashi Y., Ravankar A.A., 2016 IEEE/SICE In-ternational Symposium on System Integration (SII) (pp. 361-366), December 13-15, 2016, Sapporo, Japan. https://doi.org/10.1109/SII.2016.7844025.
71. ***3D map-building from RGB-D data considering noise characteristics of Kinect***, Yamaguchi T., Emaru T., Kobayashi Y., Ravankar A.A., 2016 IEEE/SICE In-ternational Symposium on System Integration (SII) (pp. 379-384), December 13-15, 2016, Sapporo, Japan. https://doi.org/10.1109/SII.2016.7844028.
72. ***Adaptive control for omnidirectional wheeled robot***, Kawamura K., Emaru T., Kobayashi Y., Ravankar A.A., 2016 IEEE/SICE In-ternational Symposium on System Integration (SII) (pp. 367-372), December 13-15, 2016, Sapporo, Japan. https://doi.org/10.1109/SII.2016.7844026.
73. ***Intelligent Robot Guidance in Fixed External Camera Network for Navigation in Crowded and Narrow Passages***, Ravankar A, Ravankar A.A., Kobayashi Y., Emaru T., In Proceedings of the 3rd International Electronic Conference on Sensors and Applications, 15–30 November 2016, Sciforum Electronic Conference Series, Vol. 3, 2016, D008.
74. ***Path Smoothing Extension for Various Robot Path Planners***, Ravankar A, Ravankar A.A., Kobayashi Y., Emaru T., 16th International Conference on Control, Automation and Systems (ICCAS 2016), 16-19 Oct 2016, IEEE, Gyeongju, Korea, pp. 263-268.
https://doi.org/10.1109/ICCAS.2016.7832330.
75. ***Nurturing problem-finding skills in graduate students through problem-based learning approaches***, Ravankar A.A., Imai S., Shimamura M., Takasuka T., Chiba G., Yamanaka Y., 2016 5th IIAI International Congress on Advanced Applied Informatics (IIAI-AAI) (pp. 542-546). IEEE, July 10-14, 2016, Kumamoto City, Japan. https://doi.org/10.1109/IIAI-AAI.2016.177.
76. ***Discussion on a method of team-based-learning style lecture for graduate students in a research university***, Imai S., Ravankar A.A., Shimamura M., Takasuka T., Chiba G., Yamanaka Y., 2016 5th IIAI International Congress on Advanced Applied Informatics (IIAI-AAI) (pp. 537-541). IEEE, July 10-14, 2016, Kumamoto City, Japan. https://doi.org/10.1109/IIAI-AAI.2016.135.
77. ***How Does the English Ability of the Student Change through the Postgraduate Education?The Case Report of "Nitobe School Program" in Hokkaido University***,Shimamura M., Imai S., Ravankar A.A., Yamanaka Y., 2016 5th IIAI International Congress on Advanced Applied Informatics (IIAI-AAI) (pp. 547-551,). IEEE, July 10-14, 2016, Kumamoto City, Japan. https://doi.org/10.1109/IIAI-AAI.2016.233.

- **2015**

78. ***SLAM within indoor loops by using incremental scan registration***, Lv J., Ravankar A., Kobayashi Y.,Ravankar A.A., Emaru T. 2015 IEEE/SICE International Symposium on System Integration (SII), 2015, pp. 720-725, https://doi.org/10.1109/SII.2015.7405068.

79. ***Estimation of position and trajectory of a flying ball in 3-D space***, Li M., Ravankar A., Ravankar A.A. , Kobayashi Y., Emaru T. 2015 IEEE/SICE International Symposium on System Integration (SII), 2015, pp. 443-448, https://doi.org/10.1109/SII.2015.7405020.
80. ***An Intelligent Docking Station Manager for Multiple Mobile Service Robots***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., 15th International Conference on Control, Automation and Systems (ICCAS 2015), Pages 72-78, 13-16 Oct 2015, IEEE, Busan, Korea. https://doi.org/10.1109/ICCAS.2015.7364881. (**Best Student Paper Award**)
81. ***A novel vision based adaptive transmission power control algorithm for energy efficiency in wireless sensor networks employing mobile robots***, Ravankar A., Ravankar A.A., Kobayashi Y., L. Jixin, Emaru T., and Y. Hoshino, 2015 Seventh International Conference on Ubiquitous and Future Networks, 2015, pp. 300-305, https://doi.org/10.1109/ICUFN.2015.7182554.
82. ***A Graphical Framework for Robust Indoor Mapping***, Ravankar A.A., Ravankar A., Kobayashi Y., Emaru T., The 33rd Annual Conference of the Robot Society of Japan, 2G2-05, September 3-5, Tokyo Denki University, Tokyo, Japan, 2015.
83. ***An Efficient Networking Scheme for Static and Dynamic Nodes in Multiple Service Robots***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., The 33rd Annual Conference of the Robot Society of Japan, 2G2-06, September 3-5, Tokyo Denki University, Tokyo, Japan, 2015.
84. ***On Data Security in Service Robots***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., The 33rd Annual Conference of the Robot Society of Japan, 2G2-07, September 3-5, Tokyo Denki University, Tokyo, Japan, 2015.
85. ***A solution to estimate robot motion with large rotation by match-ing laser scans***, Lv J., Kobayashi Y., Ravankar A.A., Ravankar A. Emaru T., 54th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE), IEEE, Hangzhou, 2015, pp. 1083-1088. https://doi.org/10.1109/SICE.2015.7285356.
86. ***A connected component labeling algorithm for sparse lidar data segmentation***, Ravankar A., Kobayashi Y., Ravankar A.A., Emaru T. , IEEE 6th International Conference on Automation, Robotics & Applications (ICARA), Queenstown, New Zealand, Feb.2015, pp. 437-442. https://doi.org/10.1109/ICARA.2015.7081188.

- **2014**

87. ***An embarrassingly parallel hopping window noise removing algorithm for lidar based robot mapping***, Ravankar A.A., Kobayashi Y., Lv J., Emaru T., and Hoshino Y., 2014 Proceedings of the SICE Annual Conference (SICE), 2014, pp. 307-312, Sapporo, Japan. https://doi.org/10.1109/SICE.2014.6935196.

- **2013**

88. ***Clustering Based Loop Closure Technique for 2D Robot Mapping Based on EKF-SLAM***, Ravankar A.A., Kobayashi Y., and Emaru T., 2013 7th Asia Modelling Symposium, 2013, pp. 72-77, https://doi.org/10.1109/AMS.2013.16.

- **2012**

89. ***Robot Map Building in Indoor Environment Using Clustering of Laser Range Sensor Data***, Ravankar A.A., Hoshino Y., Emaru T., and Kobayashi Y., Proceedings of the 30th Annual Conference of the Robotics Society of Japan (RSJ 2012)(CD-ROM), 4D1-5, September 17-20, 2012 (Sapporo Convention Center, Sapporo, Japan)
90. ***Application of Singular Value Decomposition in Robot Map Building***, Ravankar A.A., Hoshino Y., Emaru T., and Kobayashi Y., Proceedings of the 30th Annual Conference of the Robotics Society of Japan (RSJ 2012)(CD-ROM), 4D1-6, September 17-20, 2012 (Sapporo Convention Center, Sapporo, Japan)

- **2011**

91. ***Map Building from Laser Range Sensor Information using Mixed Data Clustering and Singular Value Decomposition in Noisy Environment***, Ravankar A.A., Hoshino Y., Emaru T., and Kobayashi Y., 2011 IEEE/SICE International Symposium on System Integration (SII), 2011, pp. 1232-1238, https://doi.org/10.1109/SII.2011.6 (**IEEE Young Author Award Finalist 2011**)

BOOK CHAPTERS

92. ***Breakwater inspection system using airborne LiDAR***, T. Ueno, T. Emaru, A.A. Ravankar, Y. Kobayashi Bridge Maintenance, Safety, Management, Life-Cycle Sustainability and Innovations, CRC Press, pages 3286-3292, eBook ISBN9780429279119.
93. ***Development of Robust Ridge Detection Method and Control System for Autonomous Navigation of Mobile Robot in Agricultural Farm***, Fujita S., Emaru T., Ravankar A.A., Kobayashi Y., CISM International Center for Mechanical Sciences 601, ROMANSY23- Robot Design, Dynamics and Control, Proceedings of the 23rd CISM IFToMM Symposium, pp. 16-23, Springer Japan. 2020 [https://doi.org/10.1007/978-3-030-58380-4]
94. ***Bio-Inspired Structure and Behavior of Self-Recovery Quadruped Robot with a Limited Number of Functional Legs***, Chattunyakit S., Kobayashi Y., Emaru T., Ravankar A.A., CISM International Center for Mechanical Sciences 601, Robot Design, Dynamics and Control, Advanced Mobile Robotics: Volume 2, pp. 162-186, MDPI Switzerland, 2020, ISBN 978-3-03921-944-5, [https://doi.org/10.3390/books978-3-03921-945-2].

✎ International Oral and Poster Presentations (Symposiums/Workshops)

95. ***ROS 2 Healthcare: Closing the Loop Between Human Sensing and Robotic Interventions*** , Jorge Peña-Queralta, Ricardo Javier Manríquez Cisterna, Heba Hussein, Oriella Gnarra, Mehdi Ejtehadi, Ankit A Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata, Diego Paez-Granados in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (Workshop on Assistive Systems: Lab to Patient Care-Full Day Workshop (ICRA-24)) (**Best Workshop Paper Award**)
96. ***Tailoring Indoor Search Strategies: The Role of User Preferences in Multi-Target Navigation*** , Akash Kedar Chikhalikar, Ankit Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (Late Breaking Paper)
97. ***Adaptive Speed Control of Treadmill Device for Enhanced Exercise in Virtual and Mixed Reality Experiences***, Ricardo Manríquez, Alexander Breuss, Oriella Gnarra, Jorge Peña Queralta, Ankit Ravankar, Jose Victorio Salazar Luces, Diego Paez, Robert Riener, Yasuhisa Hirata in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (ICRA EXPO Demo Paper)
98. ***Towards Inclusive Dance: A Robotic Approach for Enhancing Movement and Interaction for People with Disabilities***, Zhenyu Liao, Zonghao Dong, Ricardo Manríquez, Ankit Ravankar, Juan Carlos Martinez Rocha, Juliette Lavender, Fumi Seto, Eric Monacelli, Yasuhisa Hirata in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (Video Paper)
99. ***Prototype of Adaptive Touch Walking Support Robot for Maximizing Human Physical Potential Peer-reviewed***, Junya Terayama, Ankit Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (ICRA EXPO Demo Paper)
100. ***A Stand-Assist Care Robot for Enhancing Senior Mobility***, Ricardo Manríquez, Ankit Ravankar, Jose Victorio Salazar Luces, Takuro Hatsukari, Yasuhisa Hirata in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (ICRA EXPO Demo Paper)
101. ***RENKEI: Connecting sleep and assistive robotics for elderly care***, Alexander Breuss, Ricardo Manríquez, Oriella Gnarra, Manuel Fujs, Jorge Peña Queralta, Mehdi Ejtehadi, Ankit Ravankar, Jose Victorio Salazar Luces, Diego Paez, Yasuhisa Hirata, Robert Riener in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (ICRA EXPO Demo Paper)
102. ***Office Robot with Health Sensing Functions***, Hana Yamamoto, Hiroyasu Hanada, Ankit Ravankar, Jose Victorio Salazar Luces, Masashige Motoe, Yasuhisa Hirata, Koichi Ohta, Nishida Minoru, Makiyo Maekawa in IEEE International Conference of Robotics and Automations (ICRA), Yokohama, Japan 2024 (ICRA EXPO Demo Paper)
103. ***A collaborative mapping and navigation framework for multi-robot system***, A.A. Ravankar, A. Ravankar,

Y. Kobayashi, T. Emaru, Proceedings of the 8th East Asia Mechanical and Aerospace Engineering Workshop, Dec 1-3, 2018, Hong Kong Sar, China.

104. ***Scale-aware indoor localization using 2D laser rangefinder in a weak map from monocular SLAM***, S. Wang, A.A. Ravankar, A. Ravankar, Y. Kobayashi, T. Emaru, Proceedings of the 8th East Asia Mechanical and Aerospace Engineering Workshop, Dec 1-3, 2018, Hong Kong Sar, China.
105. ***Collaborative Multi-Robot Navigation in Indoor Environments***, A. Ravankar, A.A. Ravankar, Y. Hoshino, Y. Kobayashi, 2018 Joint Convention of the Hokkaido Chapters of the Institutes of Electrical and Information Engineers, October 2018, Japan.
106. ***Surveillance Mobile Robot System for Tracking and Inspection of Suspicious Entities in Indoor and Outdoor Spaces***, A. Ravankar, A.A. Ravankar, Y. Kobayashi, T. Emaru, The 7th East Asia Mechanical and Aerospace Engineering (EAMAE) Workshop, Sapporo, Japan, Nov 27-29, 2017
107. ***UAV Pose Estimation Using IR and RGB Cameras***, S. Wang, A. Ravankar, A.A. Ravankar, Y. Kobayashi, T. Emaru, The 7th East Asia Mechanical and Aerospace Engineering (EAMAE) Workshop, Sapporo, Japan, Nov 27-29, 2017
108. ***Large Scale Mapping using Semantic and Topological Information for Autonomous Mobile Robot Navigation***, A.A. Ravankar, A. Ravankar, Y. Kobayashi, T. Emaru, The 7th East Asia Mechanical and Aerospace Engineering (EAMAE) Workshop, Sapporo, Japan, Nov 27-29, 2017.
109. ***Vision Based Autonomous Docking of VTOL UAV using a Mobile Robot Manipulator***, E. Narvaez, A.A. Ravankar, A. Ravankar, Y. Kobayashi, T. Emaru, The 7th East Asia Mechanical and Aerospace Engineering (EAMAE) Workshop, Sapporo, Japan, Nov 27-29, 2017.
110. ***Algorithms for Robust Mapping and Multi-Robot Path Planning in Indoor Structured Environments***, A.A. Ravankar, The 12th Joint Symposium on Mechanical and Aerospace Engineering, December 19-20, 2016, Sapporo, Japan.
111. ***A Geometric Path Smoother for Mobile Robots***, A. Ravankar, A.A. Ravankar, Y. Kobayashi, T. Emaru, Proceedings of 12th Hokkaido University-Seoul National University (HU-SNU) International Symposium, 19-20 December, 2016, Sapporo, Japan.
112. ***An Algorithm for Secure Image Transmission in Mobile Robots***, A. Ravankar, A.A. Ravankar, Y. Kobayashi, T. Emaru, The Proceedings of 10th Hokkaido University-Seoul National University (HU-SNU) International Symposium, November 27-29, 2014, Sapporo, Japan.
113. ***2D Robot Mapping based on EKF-SLAM***, A.A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, The Proceedings of the 10h Hokkaido University- Seoul National University International Joint Symposium on Mechanical and Aerospace Engineering, Nov 17-, 2014, Sapporo, Japan.
114. ***Path Planning for Multiple Service Robots in Continuous Operation***, A. Ravankar, A.A. Ravankar, Y. Kobayashi, T. Emaru, The Proceedings of 14th University of Science and Technology, Beijing- Hokkaido University (USTB-HU) International Symposium, Mar 6-9, 2016, Beijing, China [Best Presentation Award]
115. ***Power Efficient Networking Scheme for Mobile Robots with Application to Localization***, A. Ravankar, A.A. Ravankar, Y. Kobayashi, T. Emaru, The Proceedings of 4th International Doctor Symposium on Mechanical Engineering, (IDSHU 2015), November 5-7, 2015, Sapporo, Japan.
116. ***A Mixed Clustering Algorithm for Robot Mapping***, A.A. Ravankar, Y. Hoshino, T. Emaru, Y. Kobayashi, The Proceedings of the 8th Hokkaido University- Seoul National University International Joint Symposium on Mechanical and Aerospace Engineering, Aug. 19-21, 2012, Sapporo, Japan.

✎ Domestic Conferences and Proceedings

○ 2025

1. ***Task Planning for Factory Robot Using Large Language Models with Retrieval-Augmented Generation (RAG)***, Shu Yamamoto, Salazar Jose, Ankit A. Ravankar, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2025, Yamagata, Japan 2P1-L04.
2. ***Task Planning for Robot in a Automobile Manufacturing Factory Using Large Language Model***, Yosuke

Tsushima, Shu Yamamoto, Ankit A. Ravankar, Salazar Jose, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2025, Yamagata, Japan 2P1-M03.

3. ***Integrating Uncertainty and Explainability in Colonoscopy AI Diagnosis***, Ryouya Tazawa, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2025, Yamagata, Japan 1P1-A03.
4. ***Development of ADL Support System by Slight Finger Movement***, Kohei Goto, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2025, Yamagata, Japan 1A2-L11.
5. ***Semantic Segmentation of Forest Road in Different Conditions***, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2025, Yamagata, Japan 2P1-C11.
6. ***Development of ADL Support System with User Activity Learning***, Shunsuke Amano, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2025, Yamagata, Japan 2P2-H10.

- **2024**

7. ***Topo-metric navigation of service robots using semantic features***, Ankit A. Ravankar, Abhijeet Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 2P1-O08.
8. ***Smart Task Allocation and Planning for Robots in Healthcare Environments through IoT***, Ankit A. Ravankar, Jose Victorio Salazar Luces, Fumi Seto, Abhijeet Ravankar, Yasuhisa Hirata in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 2P2-F06.
9. ***Robot Navigation through Narrow Passages***, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 1P2-M10.
10. ***Robot Control through BMI***, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 1A1-R03.
11. ***Deep Learning Based Road Detection***, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 1A1-R04.
12. ***Robot Control through Speech Commands***, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 1P1-M05.
13. ***Improving Gridmap with Semantic Information***, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 1P1-M09.
14. ***Estimation of Walking Direction from Wireless IMU Sensors for Path-Switching Control in Rail-Type Walking Support Robot***, Shota Murase, Ricardo Manriquez, Seyed Amir Tafrishi, Ankit A. Ravankar, Jose Victorio Luces Salazar, Yasuhisa Hirata in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 2A2-I05.
15. ***Development of Road Marking Application System Using Autonomous Mobile Robot***, Yuto Dai, Naho Omori, Jose Victorio Luces Salazar, Ankit A. Ravankar, Yukito Mizutani, Kohichiro Higasi, Takayuki Utsunomiya, Yasuhisa Hirata in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 2P1-C02.
16. ***Development of an automatic drafting system for road markings in accordance with the construction environment***, Naho Omori, Yuto Dai, Jose Victorio Luces Salazar, Ankit A. Ravankar, Yukito Mizutani, Kohichiro Higasi, Takayuki Utsunomiya, Yasuhisa Hirata in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2024, Utnomiya, Japan 2P1-C01.
17. ***Development of a Personal Training System Using AI and Games*** , Ryoya Tazawa, Abhijeet Ravankar, Ankit A. Ravankar, Arpit Rawankar, in The Proceedings of JSME Annual Conference on Robotics and

Mechatronics (Robomec) 2024, Utnomiya, Japan 1P1-T01.

- **2023**
  18. ***Office Robot Navigation Using a Emotion Map***, Hana Yamamoto, Hiroyasu Hanada, Yasuhisa Hirata, Salazar Jose, Ankit A. Ravankar, Yoshifumi Yanai, Minoru Nishida, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2023, Nagoya, Japan 1P1-C24.
  19. ***Integrating semantic awareness and probabilistic priors for object search in indoor environments***, Akash Chikhalikar, Ankit A. Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2023, Nagoya, Japan 1P1-C25.
- **2022**
  20. ***Simulation-based mobile robot navigation for precision agriculture monitoring application***, Ankit A. Ravankar, Abhijeet Ravankar, Jose Victorio Salazar Luces, Seyed Amir Tafrishi, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 1P1-A08.
  21. ***Dynamic Motion Planning For Mobile Robots Considering Moving Obstacles***, Ankit A. Ravankar, Abhijeet Ravankar, Jose Victorio Salazar Luces, Seyed Amir Tafrishi, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 1A1-T12.
  22. ***Robot path planning in narrow environments using improved roadmap sampling***, Ankit A. Ravankar, Abhijeet Ravankar, Seyed Amir Tafrishi Jose Victorio Salazar Luces, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2P2-M03.
  23. ***Cooperative Navigation in Multi-Robot System***, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2P2-L02.
  24. ***Robot Exploration Algorithm for Structured Environment***, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2P2-L01.
  25. ***Distributed Docking Station System for Mobile Robots***, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2P2-M06.
  26. ***Multi-robot Navigation Using Improved Pheromone Trailing***, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2A2-F10.
  27. ***Video Stabilization Algorithm for Vineyard Robots***, Abhijeet Ravankar, Ankit A. Ravankar, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 1A1-B06.
  28. ***Nursing care teaching system using mixed reality technology***, Goro Aoki, Jose Victorio Salazar Luces, Ankit A. Ravankar, Seyed Amir Tafrishi, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2P2-G07.
  29. ***Development of non-wearable walking assist robot for preventing falling accident***, Junya Terayama, Seyed Amir Tafrishi, Ankit A. Ravankar, Jose Victorio Salazar Luces, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2A2-C06.
  30. ***Development of an autonomous mobile robot for passive welfare object transportation***, Zonghao Dong, Jose Victorio Salazar Luces,Ankit A. Ravankar, Seyed Amir Tafrishi, Yasuhisa Hirata, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2022, Sapporo, Japan 2A2-B06.
- **2021**
  31. ***An improved reactive navigation method for mobile robots using potential fields***, Ankit A. Ravankar, Abhijeet Ravankar, Takanori Emaru, Yukinori Kobayashi, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2021, Osaka, Japan 1P2-G13.
  32. ***Autonomous Navigation of Mobile Robots in Vineyard***, Abhijeet Ravankar, Ankit A. Ravankar, Yohei Hoshino, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2021, Osaka, Japan 1P2-A15.
  33. ***Mobile Robot Navigation Based on Deep Reinforcement Learning with Range Only Sensor***, Beomsoo

Han, Ankit A. Ravankar, Takanori Emaru, in The Proceedings of JSME Annual Conference on Robotics and Mechatronics (Robomec) 2021, Osaka, Japan 1P1-L07.

- **2020**

34. ***Path Planning for Mobile Robots based on Semantic Mapping***, A. A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2020, 1P1-D16, May 27-30, Kanazawa, Japan.
35. ***Pose Graph Map Merging SLAM for Multiple Robots***, A. A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2020, 2A1-K08, May 27-30, Kanazawa, Japan.
36. ***A Hybrid Feature based Mapping for Indoor Service Robots***, A. A. Ravankar, A. Ravankar, T. Emaru, Y. Kobayashi, The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2020, 2P2-I07, May 27-30, Kanazawa, Japan.
37. ***A Solution for Automatic Charging of Multiple Robots***, A. Ravankar, A. A. Ravankar, M. Watanabe, Y. Hoshino, The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2020, 2A2-M04, May 27-30, Kanazawa, Japan.
38. ***Image Based Landmark Detection in Vineyards***, A. Ravankar, A. A. Ravankar, Y. Hoshino, M. Watanabe, The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2020, 1A1-A13, May 27-30, Kanazawa, Japan.
39. ***An Intelligent Cleaning Robot for Indoor Environments***, A. Ravankar, A. A. Ravankar, Y. Hoshino, M. Watanabe, The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2020, 1P1-K09, May 27-30, Kanazawa, Japan.

- **2019**

40. ***Autonomous navigation of ground robot for vineyard monitoring***, Ravankar A.A., Ravankar A., Emaru T., Kobayashi Y., The Robotics and Mechatronics Conference 2019, (ROBOMECH2019), Proceedings of the Japan Society of Mechanical Engineers, pp. 1A1-E05.
41. ***Cooperative Multi-Robot Map Merging with Task Distribution***, Ravankar A.A., Ravankar A., Emaru T., Kobayashi Y., The Robotics and Mechatronics Conference 2019, (ROBOMECH2019), Proceedings of the Japan Society of Mechanical Engineers, pp. 2A1-B15.
42. ***Robust Landmark Detection in Vineyards Using Laser Range Sensor***, Ravankar A., Ravankar A.A., Hoshino Y., Kobayashi Y., The Robotics and Mechatronics Conference 2019, (ROBOMECH2019), Proceedings of the Japan Society of Mechanical Engineers, pp. 1A1-E03.
43. ***Efficient Robot Path Planning in Crowded Passages***, Ravankar A., Ravankar A.A., Hoshino Y., Kobayashi Y., The Robotics and Mechatronics Conference 2019, (ROBOMECH2019), Proceedings of the Japan Society of Mechanical Engineers, pp. 2P1-A12.

- **2018**

44. ***Real-Time Path Smoothing for Mobile Robots in 2D and 3D Environments***, Ravankar A.,Ravankar A.A.,Kobayashi Y. Peng C. C., Emaru T., The Robotics and Mechatronics Conference 2018, (ROBOMECH2018), Proceedings of the Japan Society of Mechanical Engineers, pp. 1A1-J03.
45. ***Semantic Navigation for Indoor Service Robots***, Ravankar A.A., Ravankar A., Kobayashi Y. Peng C. C., Emaru T., The Robotics and Mechatronics Conference 2018, (ROBOMECH2018), Proceedings of the Japan Society of Mechanical Engineers, pp. 1P1-G01.

- **2016**

46. ***Clustering Based Line Detection in Noisy Datasets***, Ravankar A.A., Ravankar A., Kobayashi Y., Emaru T., The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2016, pp. 1P1-07a4. Yokohama, Japan.
47. ***A Multi-Robot Path Planning Scheme and Management based on Power Availability***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T., The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2016, pp. 2A1-06b4 Yokohama, Japan.

- **2015**

48. ***Real Time Parallel Implementation of Dynamic Feature Detection on Embedded Robot Platforms***, Ravankar A., Ravankar A.A., Kobayashi Y., Emaru T.,Lv J., The Proceedings of JSME annual conference on Robotics and Mechatronics (ROBOMEC) 2015, pp. 2A1-S04.
49. ***Recognition of 3-D Grid Structure Recognition with Fixed Camera and RGB-D Camera***, Wang C., Kobayashi Y., Emaru T., Ravankar A.A., The Proceedings of JSME annual conference on Robotics and Mechatronics (ROBOMEC) 2015, 1A1-H04.
50. ***Vision based Localization and Mapping for Indoor Robots using RGBD Sensor***, Ravankar A.A., Ravankar A., Lv J., Emaru T., Kobayashi Y., The Proceedings of JSME annual conference on Robotics and Mechatronics (ROBOMEC) 2015, pp 2A2-M06.

- **2013**

51. ***A New Algorithm to Detect Lines in Noisy Environment for Indoor Robot Mapping***, Ravankar A.A., Hoshino Y., Emaru T., and Kobayashi Y., In The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec) 2013 (pp. _1P1-I07_1). The Japan Society of Mechanical Engineers.

CONFERENCE PROCEEDINGS IN OTHER LANGUAGE(DOMESTIC CONFERENCES)

- **2024**

52. 自律移動ロボットによる路面標示の自動塗布システムと塗布幅調整機構の開発,
代 悠人, 大森 菜帆, Salazar Jose, Ravankar Ankit, 水谷 行人, 東 弘一朗, 宇都宮 崇之, 平田 泰久 第25回計測自動制御学会システムインテグレーション部門講演会(SI2024), 2024, 3E2-01
53. 路面標示施工における駐車場区画線の自動作図システムの開発,
大森 菜帆, 代 悠人, Salazar Jose, Ravankar Ankit, 水谷 行人, 東 弘一朗, 宇都宮 崇之, 平田 泰久 第25回計測自動制御学会システムインテグレーション部門講演会(SI2024), 2024, 3E2-02
54. 大規模言語モデル搭載ロボットによる介護現場の業務支援,
中野 真太郎, 山本 周, Salazar Jose, Ravankar Ankit, 平田 泰久 第25回計測自動制御学会システムインテグレーション部門講演会(SI2024), 2024, 3A7-08

- **2023**

55. 多彩な接触を実現する寄り添い型歩行支援ロボットの運動制御,
寺山隼矢，マンリケス リカード, 董宗昊, ラワンカル アンキット, サラザル ホセ, 平田泰久, 41回日本ロボット学会学術講演会予稿集, 2023, 仙台, Page： ROMBUNNO.1I1-03
56. 受動的な支援器具の移動を実現する脱着型搬送ロボットの開発,
董 宗昊,寺山隼矢, ラワンカル アンキット, サラザル ホセ, 廖 振宇, 瀬戸 文美, 平田泰久, 41回日本ロボット学会学術講演会予稿集, 2023, 仙台, Page： ROMBUNNO.1A3-05
57. ドローン機体を用いた街灯検査ロボットの開発,
渡部 澄葵， Ankit A. Ravankar, Salazar Luces Jose Victorio, 平田 泰久 第24回計測自動制御学会システムインテグレーション部門講演会SI2023, 2023, 3A2-05.

- **2022**

58. 病院環境における画像処理を使用した 医者の行動分析システムの開発,
川本大貴， Abhijeet Ravankar, Ankit A. Ravankar, ウ アテイ, 奥村貴史, 情報処理北海道シンポジウム, 2022, 10.
59. 画像処理を用いたスマートヘルスケアのシステム開発,
岡村怜， Abhijeet Ravankar, Ankit A. Ravankar, 情報処理北海道シンポジウム, 2022, 10.
60. 障害物回避機能を搭載したアバターロボットによる没入型バーチャルウォーキング,
阪田 葵，Ankit A. Ravankar, Salazar Luces Jose Victorio, 平田 泰久 第23回計測自動制御学会システムインテグレーション部門講演会SI2022, 2022, 1P2-G03.
61. 人に歩く挑戦を促す寄り添い型歩行支援ロボットの開発,
寺山 隼矢， Tafrishi Seyed Amir, Ankit A. Ravankar, Salazar Luces Jose Victorio, 平田 泰久 第23回計測自動制御学会システムインテグレーション部門講演会SI2022, 2022, 1P2-G04.
62. スウィング型三輪自転車のための障害物回避制御,

千葉 魁志，Salazar Luces Jose Victorio, Ankit A. Ravankar, Tafrishi Seyed Amir, 平田 泰久 第23回計測自動制御学会システムインテグレーション部門講演会SI2022, 2022, 1P2-G05.

63. 作図線検知に基づく路面標示の自動施工システムの開発,
堀 航輔，Salazar Luces Jose Victorio, Ankit A. Ravankar, 東 弘一朗, 宇都宮 崇之, 平田 泰久 第23回計測自動制御学会システムインテグレーション部門講演会SI2022, 2022, 1A2-B15.

- **2021**

64. Cooperation of AI-Robot Enablers - CARE, Jose Salazar, Ankit A. Ravankar, Seyed Amir Tafrishi, 平田 泰久 第22回計測自動制御学会システムインテグレーション部門講演会（オンライン）SI2021, 2021, 3H4-09.
65. 高精度SLAMのための疎なLiDAR情報を使用したスキャンマッチング改善手法の提案,
高野睦巳, 江丸貴紀, Ankit A. Ravankar, 第53回計測自動制御学会北海道支部学術講演会, 2021, 03.
66. 自動除草ロボットのためのロバストな畝の認識方法と車体制御の提案,
井内悠介, 江丸 貴紀, Ankit A. Ravankar, 第53回計測自動制御学会北海道支部学術講演会, 2021, 03.
67. UAVを用いた広域なフィールドを管理するためのVisual-SLAMの適用,
竹内　一真, 江丸 貴紀, Ankit A. Ravankar, 第53回計測自動制御学会北海道支部学術講演会, 2021, 03.
68. 低解像度赤外線サーモグラフィを用いた降雪環境における人物検出,
橋　悠人, 江丸 貴紀, Ankit A. Ravankar, 第53回計測自動制御学会北海道支部学術講演会, 2021, 03.
69. 積雪環境における赤外線サーモグラフィを用いた単眼Visual SLAM,
中出 崚太, 江丸 貴紀, Ankit A. Ravankar, 第53回計測自動制御学会北海道支部学術講演会, 2021, 03.
70. インフラの維持管理を目的としたARマーカーを用いた高精度地図生成,
日向 涼, 江丸 貴紀, Ankit A. Ravankar, 第53回計測自動制御学会北海道支部学術講演会, 2021, 03.

- **2020**

71. UAV を用いた自動スペクトル計測システムにおける三次元飛行経路の生成,
本間 貫太, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
72. UAV を用いた自動スペクトル計測システムにおけるジンバル制御,
楊 延峰, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
73. 歩道除雪環境における LiDAR を用いたロバスト歩行者検出システム,
佐々木 祐太, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
74. 積雪環境におけるスキャンマッチングを用いた自己位置推定性能の改善,
小渕 雅弘, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
75. 未知環境における UAV 用リアルタイムナビゲーションシステムの開発,
久保 共平, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
76. 歩道除雪作業の効率化を目的としたサーマルカメラによる人物検出,
南岡 和弥, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
77. サーモカメラを用いた LiDAR 点群のリアルタイム補完手法の提案,
長谷川 智彦, 江丸 貴紀, Ankit A. Ravankar, 第21回計測自動制御学会システムインテグレーション部門講演会, 2020, 12.
78. 樹木胸高直径（DBH）推定のためのStereo カメラによるドローン観測およびモバイルステレオスキャンの提案,
トライラッタナパー ヴィサルット, 江丸 貴紀, Ankit A. Ravankar, 第11回北海道ロボット技術研究専門委員会学術講演会, 2020, 3.
79. 実環境における3DLIDAR を用いたUAV による防波堤点検システム,
岡野裕大, 江丸 貴紀, Ankit A. Ravankar, 第11回北海道ロボット技術研究専門委員会学術講演会, 2020, 3.

80. RGB-D とLiDAR センサーを用いた動的環境のEKF-SLAM,
Beomsoo Han, Ankit A. Ravankar, 江丸 貴紀, 第11回北海道ロボット技術研究専門委員会学術講演会, 2020, 3.
81. ピンポイント除草作業を実現するロボットマニピュレータ制御,
木下拓, 江丸 貴紀, Ankit A. Ravankar, 第11回北海道ロボット技術研究専門委員会学術講演会

- **2019**

82. 独立型一体内装構造を有する鉄道車体モデルの振動音響解析, *Vibration and Acoustic Analysis of a Railway Carbody Model with Independent Interior Structure*, Shuntaro Ono, Yukinori Kobayashi, Katsuya Yamamoto, Mineyuki Asahina, Takanori Emaru, and Ankit Ravankar, 第 28 回 交通・物流部門大会（TRANSLOG2019）, Nov.27-29, Japan, https://doi.org/10.1299/jsmetld.2019.28.2103)
83. *Semi- active vibration control of a double shell railway car-body model using bonded Piezo-electric Patch Configuration and an integrated shunt circuit*, Silabhadra Das, Ashish Gupta, Yukinori Kobayashi, Yamamoto Katsuya, Takigami Tadao, Asahina Mineyuki, Takanori Emaru, and Ankit A. Ravankar, 62回自動制御連合講演会(CD-ROM), ROMBUNNO.2C1-03.
84. 原木材計測への深層学習の応用,
森井隆禎, 江丸 貴紀, Ankit A. Ravankar, 第20回計測自動制御学会システムインテグレーション部門講演会, 2019, 12.
85. オムニホイール 移動ロボットの斜面における追従性能向上手法の提案,
藤田隼輔, 江丸 貴紀, Ankit A. Ravankar, 第62回自動制御連合講演会, 2019, 3.
86. 最近防探索によるLiDAR点群の降雪ノイズ除去,
佐々木祐太, 江丸 貴紀, Ankit A. Ravankar, 第51回計測自動制御学会北海道支部学術講演会, 2019, 3.
87. UAVを用いた防波堤点検システムの構築,
上野貴希, 江丸 貴紀, Ankit A. Ravankar, 第51回計測自動制御学会北海道支部学術講演会, 2019, 3.
88. サーモカメラと3D LiDARのセンサフュージョンによる雪道における轍幅の推定,
長谷川智彦, 小林幸徳, 江丸 貴紀, Ankit A. Ravankar, 第51回計測自動制御学会北海道支部学術講演会, 2019, 3.
89. 雪道環境における自動運転技術のための３次元LiDARを用いた点群処理に基づく雪山検出,
小渕雅弘, 小林幸徳, 江丸 貴紀, Ankit A. Ravankar, 第51回計測自動制御学会北海道支部学術講演会, 2019, 3.

- **2018**

90. 特徴点が疎な積雪環境における地図作成およびナビゲーションシステムの開発,
朱 承儒, 江丸 貴紀, Ankit A. Ravankar, 小林幸徳, 第19回計測自動制御学会システムインテグレーション部門講演会（SI2018, 2018, 12.)
91. 作物検出を目的とした深層学習のためのデータセット自動作成,
金 智姫, 江丸 貴紀, Ankit A. Ravankar, 小林幸徳, 第19回計測自動制御学会システムインテグレーション部門講演会（SI2018, 2018, 12.)
92. 障害物とロボットの最小旋回半径を考慮したCoverage Pathの最適化, *Optimization of Coverage Path considering Obstacles and Minimum Turning Radius of Machines* , Koki Obonai, Takanori Emaru, Ankit Ravankar, Yukinori Kobayashi,第61回自動制御連合講演会,南山大学(Nanzan University, Aichi, Japan), November 17-18, 2018
93. 深層学習を用いた農作物の自動検出における教師データ画像の加工, *Detection System of Crops in Agricultural Fields using the characteristics of Leaves* , Ai Kageyama, Takanori Emaru, Ankit Ravankar, Yukinori Kobayashi,第61回自動制御連合講演会,南山大学(Nanzan University, Aichi, Japan), November 17-18, 2018
94. 斜面におけるオムニホイールロボットの自己位置および斜面勾配の推定,
山田涼裕, 小林幸徳, 江丸貴紀, Ankit A. Ravankar, 第10回日本ロボット学会北海道ロボット技術研究専門委員会学術講演会, 2018, 3.
95. 森林管理用4輪駆動ロボットの開発と運動解析,
藤田隼輔, 小林幸徳, 江丸貴紀, Ankit A. Ravankar, 第10回日本ロボット学会北海道ロボット技術研究専

門委員会学術講演会, 2018, 3.

96. メタヒューリスティクスを用いたUAVの経路の最適化,
内統広, 小林幸徳, 江丸貴紀, Ankit A. Ravankar, 第10回日本ロボット学会北海道ロボット技術研究専門委員会学術講演会, 2018, 3.
97. 深層学習とHough変換の応用による原木材計測システム,
森井隆禎, 小林幸徳, 江丸貴紀, Ankit A. Ravankar, 第10回日本ロボット学会北海道ロボット技術研究専門委員会学術講演会, 2018, 3.

- **2017**

98. 車輪状に変形可能なLimb型ロボットの転がり移動, Shoma Torii , Shuhei Yoshida, Yukinori Kobayashi, Takanori Emaru, and Ankit Ravankar, 18th SICE System Integration (SI2017), Sendai, Dec. 20-22, Japan, 2017
99. マルチロボットシステムにおけるグラフ理論を用いたタスク計画,
木下拓, 江丸貴紀, 小林幸徳, Ankit A. Ravankar, 計測自動制御学会北海道支部学術講演会論文集, 2017
100. ステアリング機構を有する移動ロボット除草システムの開発,
小保内弘毅, 江丸貴紀, 小林幸徳, Ankit A. Ravankar, 計測自動制御学会北海道支部学術講演会論文集, 2017
101. 林業フィールドにおける樹木の認識と自己位置推定,
長井一弘, 江丸貴紀, 小林幸徳, Ankit A. Ravankar, 計測自動制御学会北海道支部学術講演会論文集, 2017
102. UAV搭載シングルカメラによる3次元マップ構築およびスケール決定,
青山佳樹, 江丸貴紀, 小林幸徳, Ankit A. Ravankar, 計測自動制御学会北海道支部学術講演会論文集, 2017
103. 葉を特徴点として利用した実環境における農作物の検出・判別システムの提案,
影山藍, 江丸貴紀, 小林幸徳, Ankit A. Ravankar, 計測自動制御学会北海道支部学術講演会論文集, 2017

Invited Lecture and Workshops

2025 ***Collaborative Multi-robot Framework for Elderly Care*** , HeKKSaGOn Working Group, Digital Solutions for Aging Societies: Harnessing AI and Robotics for Personalized Assistance, 20th January 2025, Karlsruhe Institute of Technology (Invited Lecture)

2024 ***India-Japan Study Programs and Opportunities*** , India-Japan Innovation Symposium, Advancing Research, Networking, and Industry Partnerships, Indian Institute of Technology (IIT), Gandhinagar, 11th March 2024 (Invited Lecture)

2024 ***Collaborative and Cooperative Multi-robot Systems and Human-Robot Interactions*** , SysCon Talks, Department of Systems and Control Engineering (SysCon), Indian Institute of Technology (IIT), Mumbai, 13th March 2024 (Invited Lecture)

2024 ***Advances in Multi-robot Systems and Human Robot Interactions***, Electronics & Telecommunication (E&TC) Engineering Department of Thakur College of Engineering & Technology (TCET), Kandivali, Mumbai, Technical Seminars for third year E&TC students, 15th March 2024 (Invited Lecture)

2022 ***Robot Exploration and Mapping of Unstructured Indoor Environments using segment-based Clustering of Range Data with Uncertainty***, 2022 Robotics Symposia, March 17, 2022, Tokyo, Japan (Invited Lecture)

2020 ***Recent Advances in Autonomous Mobile Robot Navigation and SLAM***, Advancement in Mobile Robot Navigation (Emerging Research Trends on Robotics and it's Applications (ERTRA 2020) - Phase III, Department of Electronics and Communication Engineering, MEPCO SCHLENK ENGINEERING COLLEGE (AUTONOMOUS), SIVAKASI, India), 2020, 10 (Invited Lecture)

2019 チュートリアル：ゼロからはじめる***OpenCV*** によるコンピュータビジョン (OpenCV: Computer Vision from Zero to Advanced), Abhijeet Ravankar and Ankit A. Ravankar, 第62回自動制御連合講演会, 札幌コンベンションセンター, 札幌市 , November 11th, 2019 (Tutorial Workshop- Presenter)

2018 ***Autonomous mobile robot mapping and navigation using topological and semantic information***, AGH University of Science and Technology, Krakow, Poland, May 14-16, 2018 (Invited Lecture)

2018 ***Autonomous Mobile Robot Mapping and Navigation using Topological and Semantic Information***, Ankit A. Ravankar, Abhijeet Ravankar, Yukinori Kobayashi, and Takanori Emaru, Hokkaido University- Zhejiang University Joint Symposium on Mechanical Engineering, Zhejiang, China, 27-28 March, 2018 (Invited Lecture)

2018 ***Semantic Navigation for Mobile Robot using a Hybrid Topo-Metrological SLAM*** , (Zhejiang University, Institute of Cyber Systems and Control, China), 27 March, 2018. (Invited Lecture)

2018 ***Mobile Robot Mapping and Localization in Indoor Structured Environment using Sensor Fusion***, 2nd Taiwan-Japan International Engineering Forum, Taipei , 1st March, 2018 (Invited Lecture)

2017 ***Large Scale Mapping using Semantic and Topological Information for Autonomous Mobile Robot Navigation***, Ankit A. Ravankar, Abhijeet Ravankar, Yukinori Kobayashi, and Takanori Emaru, The 7th East-Asia Mechanical and Aerospace Engineering Workshop, Nov. 27- 29, 2017, Sapporo, Japan. (Invited Lecture)

2016 ***Algorithms for Robust Mapping and Multi-Robot Path Planning in Indoor Structured Environments***, A.A. Ravankar, The 12th Joint Symposium on Mechanical and Aerospace Engineering, December 19-20, 2016, Sapporo, Japan. [Invited Talk]

Courses and Teaching

Undergraduate **Applied Mathematics 1**

Undergraduate **Technical English for Engineering**

Undergraduate **Exercise on Control Engineering**

Undergraduate **Laboratory Exercise on Vibration of Beam**

Undergraduate **Laboratory Exercise on Mechatronics Engineering**

Graduate **Introduction to Robotics**

Graduate **Project Management - Special Course for Nitobe School - Course Director**

Graduate **PBL training- Problem Finding - Special Course for Nitobe School (2015-2018)**

Societies and Contribution

Societies

2012-Present **Full Member** - IEEE, USA

2012-Present **Full Member**- IEEE, Robotics and Automation Society (IEEE-RAS), USA

2022-Present **Full Member**- IEEE, Standards Association (IEEE SA), USA

2016-Present **Full Member**- Society of Instrument and Control Engineers, SICE, Japan

2017-Present **Full Member**- Japan Society of Mechanical Engineers, JSME, Japan

Education/ University committees

2016-2021 **International Steering Committee** - International Research Skills Program for Developing Sustainable Transportation System and Infrastructure (STSI), Hokkaido University, Japan

2015-2018 **Course Design Committee** - Nitobe Graduate School Program, Hokkaido University, Japan

2015-2017 **Core Committee** - Nitobe Graduate School Program, Hokkaido University, Japan

2019-2021 **Doctoral Thesis Reviewer** - University of Technology Sydney, Sydney, Australia.

Conference Activities and Society Committees

2025 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2026, Jan 11-14, Cancun, Mexico 2026.

2025 **ICRA EXPO Co-Chairman**- 2025, IEEE International Conference on Robotics and Automation (ICRA), Atlanta, Georgia, USA, May 18- 23, 2025.

2024-present **Junior Editorial Board Member**- Journal of Intelligent & Robotics.

2024-present **Associate Editor**- IEEE Internet of Things Journal.

2024 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2025, Jan 21-25, Munich, Germany 2025.

2024 **ICRA EXPO Organizing Committee**- 2024, IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan, May 12- 17, 2024.

2024 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2024, Jan 8-11, Ha Long, Vietnam, 2024.

2024 **Special Session Organizer**- IEEE/SICE International Symposium on System Integration SII2024, Special session on Robotics and AI for Home Automation, Healthcare and Ambient Assistive Living, Jan 8-11, Ha Long, Vietnam, 2024.

2023-present **Guest Editor**- MDPI Sensors Journal, Advanced Research in Intelligent Autonomous Mobile Robots System, Learning and Control (Ongoing)

2023 **Special Session Organizer**- IEEE/SICE International Symposium on System Integration SII2023, Special session on Robotics and AI for Home Automation, Healthcare and Ambient Assistive Living, Jan 17-20, Atlanta, GA, USA, 2023

2023-2025 **IEEE SA Working Group Vice Chairman**- IEEE SA P7017 Recommended Practice for Design-Centered Human-Robot Interaction (HRI) and Governance

2023-2025 **Planning Committee Chairman** - 41st Annual Conference of the Robotics Society of Japan (RSJ) 2023, Sendai, Japan.

2023 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2023, Jan 17-20, Atlanta, GA, USA, 2023.

2022 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2022, (Online Event)

2021-2022 **Elected Representative** - Japan Society of Instrumentation and Control Engineering (SICE)

2016-2021 **Steering Committee**-Hokkaido Robot Triathlon Contest 北海道ロボットトライアスロン大会

2019-present **International Program Committee** - International Symposium on Artificial Life and Robotics, ISAROB

2019 **Workshop Tutorial Committee**-第62回自動制御連合講演会札幌11月8日、2019

2019 **Local Organizing Committee**-第62回自動制御連合講演会札幌11月8日、2019

2019 **Workshop organizer**-ゼロからはじめるOpenCVによるコンピュータビジョン、第62回自動制御連合講演会札幌11月8日、2019

2019 **Program Committee**-IIAI- 8th International Conference on Data Science and Institutional Research (DSIR2019)

2018 **Program Committee**-IIAI - 7th International Conference on Data Science and Institutional Research (DSIR2018)

2018 **Local Committee Organizer**-8th International Conference on Indoor Positioning and Indoor Navigation (IPIN 2018), Sept. 18- 21,2018, Sapporo, Japan

2017 **Program Committee and Session Organizer**- IEEE/SICE International Symposium on System Integration SII 2017, Special session on Autonomous Mobile Robots and Intelligent System: Recent Trends and Applications, Dec. 11-14, 2017, Taipei, Taiwan

2017 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2017, Dec. 11-14, Taipei, Taiwan, 2017.

2016 **Program Committee and Session Organizer**- IEEE/SICE International Symposium on System Integration SII 2016, Special session on Autonomous Mobile Robots and Intelligent System: Recent Trends and Applications, Dec. 13-15, 2016, Sapporo, Japan

2016 **Associate Editor**- IEEE/SICE International Symposium on System Integration SII2016, Dec. 13-15, 2016, Sapporo, Japan.

2016 **Program Committee and Local Organizing committee**- 4th International Doctoral Symposium on Mechanical Engineering at Hokkaido University (IDSHU), 2015, Sapporo, Nov. 5-7, Japan, 2015.

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