Ankit Ravankar

Curriculum Vitae

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Education

Oct.2012–Sept.2015 **Ph.D. Engineering**, *Hokkaido University*, Japan, Human Mechanical Systems and Design Engineering with specialization in Robotics and Artificial Intelligence.
GPA – 4/4 (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.*
Human Mechanical Systems and Design Engineering

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

Additional Certifications

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
System Integration
Healthcare and Assistive Robotics
Service Robotics
Field Robotics
Intelligent Navigation
Perception and planning
Machine Vision

Scholarships and Awards

SCHOLARSHIPS

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

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

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*

Feb.2020 ***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)

2021-2023 「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)

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) (200000 JPY)

COMPLETED PROJECTS

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) (20 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: **2108** (as of 4th March 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. ***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, vol. 10, no. 3, pp. 2383-2390, March 2025, doi: 10.1109/LRA.2025.3531153.
- **2024**
  2. ***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, vol. 9, no. 8, pp. 6935-6942, Aug. 2024, doi: 10.1109/LRA.2024.3415928.
  3. ***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.
  4. ***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.
  5. ***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**
  6. ***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.
  7. ***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.

8. ***Running Guidance for Visually Impaired People Using Sensory Augmentation Technology Based Robotic System***, Zhenyu Liao, Jose V. Salazar Luces, Ankit A. Ravankar and Yasuhisa Hirata, IEEE Robotics and Automation Letters, vol. 8, no. 9, pp. 5323-5330, Sept. 2023, doi: 10.1109/LRA.2023.3294718.
9. ***A Performance Evaluation of Overground Gait Training With a Mobile Body Weight Support System Using Wearable Sensors***, Zhonghao Dong, Jose V. Salazar Luces, Ankit A. Ravankar, Seyed Amir Tafrishi and Yashuhisa Hirata, in IEEE Sensors Journal, vol. 23, no. 11, pp. 12209-12223, doi: 10.1109/JSEN.2023.3269031.
10. ***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 Robotics & Automation Magazine Feature Paper**)

- **2021**

11. ***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.)
12. ***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 - Joint First Author**)

- **2020**

13. ***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)
14. ***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)
15. ***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)
16. ***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
17. ***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
18. ***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 - Joint First Author**)
19. ***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
20. ***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
21. ***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(**The Society of Instrument and Control Engineers Best Journal Paper Award 2020**)

- **2019**
  22. ***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- Joint First Author**)
  23. ***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 - Joint First Author**)
  24. ***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
  25. ***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**
  26. ***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 - Joint First Author**)
  27. ***Hitchhiking Based Symbiotic Multi-Robot Navigation in Sensor Networks***, Abhijeet Ravankar*, Ankit A. Ravankar*, Yukinori Kobayashi, Yohei Hoshino, Chao-Chung Peng and Michiko Watanabe, Robotics 2018, 7(3), 37; https://doi.org/10.3390/robotics7030037(***Equal Contribution - Joint First Author**)
  28. ***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**
  29. ***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 - Joint First Author**)
  30. ***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 - Joint First Author**)
  31. ***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
  32. ***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 - Joint First Author**)
  33. ***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**
  34. ***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.
  35. ***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.

36. ***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.
37. ***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**

38. ***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.
39. ***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**

40. ***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**

41. ***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. ***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 (Accepted).
2. ***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.
3. ***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.

- **2024**

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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)

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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, 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 and society committees

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.

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

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

2023-2025 **Guest Editor**- MDPI Sensors Journal, Special issue on 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 **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 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.

References

- **Yukinori Kobayashi**- President, Tomakomai National Institute of Technology, Tomakomai College, Hokkaido, Japan
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