

IEEE Robotics & Automation Society

2024

Awards
Ceremony

16 May 2024
ICRA, Yokohama, Japan





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Recognition of Professional Achievement

For nearly a century, the IEEE Awards program has paid tribute to technical professionals whose exceptional achievements and outstanding contributions have made a lasting impact on technology, society and the engineering profession.

That tradition of public recognition continues today. In the 21st century, IEEE Awards are valued as among the highest honors a technical professional can receive. They are an esteemed symbol of the admiration of one's peers—the most prized form of prestige—bestowed upon individuals whose accomplishments have enhanced the global economy while improving the quality of daily life.

Legacy of Innovation

IEEE Awards recognize and encourage important contributions to technology, science and the profession. They honor achievements in education, industry, research and service, and they encompass the breadth of the many IEEE technical interest areas from computer science, electrical engineering, information technologies and microelectronics, to optoelectronics, radar technologies, signal processing and beyond. Each award has its own unique mission and criteria, and offers the opportunity to honor distinguished colleagues, inspiring teachers and corporate leaders.

Through the Awards program, the IEEE, and the societies that preceded it, also have played an important role in encouraging innovation. Individuals honored with IEEE Awards join a remarkable group of such well-known pioneers as Bell, Edison, Marconi, Noyce and Grove—among many others. These individuals, in turn, provide inspiration and personal role models for aspiring professionals.

IEEE Awards Selection Process

Nominations for IEEE awards and recognitions are initiated by the members and others, then reviewed by a panel of peers—professionals who are especially knowledgeable in a particular field. Their recommendations are, in turn, submitted to the IEEE Awards Board for further review prior to final approval by the IEEE Board of Directors. The awards fall into seven categories:

- Medals
- Honorary Memberships
- Service Awards
- Corporate Recognitions
- Technical Field Awards
- Prize Paper Awards



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The IEEE Robotics and Automation Award

The IEEE Robotics and Automation Award was established in 2002 by the IEEE Board of Directors, and is presented for contributions in the field of robotics and automation. It includes but is not limited to: manufacturing automation; robotics and automation in unstructured environments; sensor design; integration and fusion; robot design; modeling; planning and control; methodologies for robotics and automation, and the quality of the nomination.

Sponsored by the IEEE Robotics & Automation Society, the award consists of a bronze medal, certificate, and honorarium.

For additional information on IEEE Technical Field Awards and Medals, to view complete lists of past recipients, or to nominate a colleague or associate for IEEE Technical Field Awards and Medals, please visit: www.ieee.org/awards.

Past Recipients

- 2023 – Daniela Rus
- 2022 – Wolfram Burgard
- 2021 – Jean-Claude Latombe
Tomas Lozano-Perez
- 2020 – Vijay Kumar
- 2019 – Zexiang Li
Frank Wang
- 2018 – Matthew T. Mason
- 2017 – Oussama Khatib
- 2016 – Raffaello D'Andrea
- 2015 – Rodney A. Brooks
- 2014 – Shigeo Hirose
- 2013 – Ruzena Bajcsy
- 2012 – Bernard Roth
- 2011 – Hirochika Inoue
- 2010 – Toshio Fukuda
- 2009 – Antal Bejczy
- 2008 – Paul G. Backes
Eric T. Baumgartner
Larry H. Matthies
- 2007 – Gerd Hirzinger
- 2006 – George A. Bekey
- 2005 – Seiueemon Inaba
- 2004 – Joseph F. Engelberger





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2024 IEEE Robotics and Automation Award



Paolo Dario

*Scuola Superiore Sant'Anna
Pisa, Italy*

**For establishing and advancing bionics
and biorobotics as key research
areas worldwide, integrating
robotics and medicine**

Paolo Dario is the father of biorobotics. The techniques he innovated are the basis for the practical application of robotics in engineering and medicine, including minimally invasive surgery and rehabilitation devices for the elderly and disabled. He was one of the main proposers of bio-inspired sensors and devices, and of medical applications of robotics, at a time when they were unknown to most roboticists. His pioneering work in tactile sensing and artificial perception for robots enabled cybernetic prostheses that directly interfaced with the nervous system. He has also contributed to the development of neurorobotics, which combines the latest advances in neuroscience with robotics to expand the capability of human-robot interaction and empower the robot with human intelligence.

An IEEE Life Fellow, Dario is Professor Emeritus of Biomedical Robotics, Scuola Superiore Sant'Anna, Pisa, Italy.



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The IEEE Kiyo Tomiyasu Award

The IEEE Kiyo Tomiyasu Award was established in 2001 by the IEEE Board of Directors, and is presented to recognize outstanding early to mid-career contributions to technologies holding the promise of innovative applications. Sponsored by Dr. Kiyo Tomiyasu, the IEEE Geoscience and Remote Sensing Society, and the IEEE Microwave Theory and Techniques Society, the award consists of a bronze medal, certificate, and honorarium.

For additional information on IEEE Technical Field Awards and Medals, to view complete lists of past recipients, or to nominate a colleague or associate for IEEE Technical Field Awards and Medals, please visit: www.ieee.org/awards

Past Recipients

- 2021 – Zhu Han
- 2020 – Andrea Alu
- 2019 – Robert W. Heath, Jr. & Jeffrey Andrews
- 2018 – Nicholas Laneman
- 2017 – Emilio Frazzoli
- 2016 – Yonina Eldar
- 2015 – Kaustav Banerjee & Vivek Subramanian
- 2014 – George Chrisikos
- 2013 – Carlos Artemio Coello
- 2012 – Mung Chiang
- 2011 – Moe Z. Win
- 2010 – Tsu-Jae King Liu
- 2009 – Shih-Fu Chang
- 2008 – George V. Eleftheriades
- 2007 – Alberto Moreira
- 2006 – Muhammad A. Alam
- 2005 – Chai K. Toh
- 2004 – David B. Fogel
- 2003 – Keshab K. Parhi
- 2002 – Casimer Decusatis





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2024 IEEE KIYO TOMIYASU AWARD



Davide Scaramuzza

*University of Zurich
Zurich, Switzerland*

**For contributions to agile visual
navigation of micro drones and
low-latency robust perception with
event cameras**

Davide Scaramuzza is an international authority in the field of robotics, specifically in agile visual navigation for micro drones and robust perception using event cameras on low-latency systems. His research has been instrumental in enhancing the autonomy, agility, decision-making, and safety capabilities of modern flying robots and autonomous systems. He pioneered autonomous, vision-based navigation of drones, which inspired the navigation algorithm of the NASA Mars helicopter. And, in 2022, his team demonstrated that an AI-controlled, vision-based drone could outperform the world champions of drone racing. His work at the intersection of traditional robotics theory and visual navigation techniques has translated to innovative commercial products that have real-world impact and generate new value for society.

An IEEE Senior Member, Scaramuzza is Professor and Director of the Robotics and Perception Group, University of Zurich, Zurich, Switzerland.



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IEEE Fellows Elevated as of January 2024

IEEE Fellow is the highest grade of Institute membership, conferred only by election by the Board of Directors. Candidates must be senior members with at least five years of IEEE membership. The nominator is responsible for preparation of the formal nomination form; identification of five to eight IEEE Fellows, capable of assessing the candidate's contributions, who agree to serve as references; identification of an IEEE Society or Council whose evaluating committee will assess the candidate's technical qualifications and contributions. All material is sent to the Fellow Committee, which must review all nominations and assessments, and prepare a ranked list. The total number of Fellow recommendations each year cannot exceed 0.1% of IEEE membership, exclusive of Students and Affiliates.



**Congratulations to the
IEEE Robotics and Automation Society
2024 Fellow Class**



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2024 IEEE Fellow Class

Chien Cheah — for contributions to task-space robot control and dynamic multi-robot control

Noah Cowan — for contributions to sensing, navigation, and control in animals and machines

Mariagrazia Dotoli — for contributions to control of logistics systems in smart cities

Sami Haddadin — for contributions to robot safety, tactile robots, and interaction control

George Q Huang — for contributions on digitization framework and cyber-physical analytics for smart manufacturing

Paul Oh — for contributions to unmanned aerial vehicles and humanoid robotics

Danail Stoyanov — for contributions to intelligent computer-assisted surgical and diagnostical systems

Salah Sukkarieh — for contributions to robotic navigation in aerial and agricultural applications

Sheng Xie — for contribution to robotics for rehabilitation and healthcare



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Pioneer in Robotics and Automation Award



Mark R. Cutkosky

“For contributions to Robot Design: from Bioinspiration to Biounderstanding”

Mark R. Cutkosky was born in Pittsburgh, PA (USA) and worked as a machine design engineer at ALCOA before getting his PhD in 1985 in Mechanical Engineering and the Robotics Institute at Carnegie Mellon University. He then joined the faculty at Stanford University, Stanford CA, where he currently holds the Fletcher Jones Chair in Mechanical Engineering. Cutkosky’s research activities include robotic manipulation and tactile sensing and the design and fabrication of biologically inspired robots. Among the best known of these are the Stickybot gecko-inspired climbing robot and the Spinybot insect-inspired climbing robot. Cutkosky has graduated 70 PhD students who now hold leading positions in academia and industry and has over 300 publications and two dozen patents

His research on gecko-inspired adhesives has been applied to human climbing, perching micro air vehicles and micro robots. His work has been featured in Discover Magazine, The New York Times, National Geographic, Time Magazine and other publications and has appeared on PBS NOVA, CBS Evening News, Veritasium, and other popular media. He is a frequent program member of IEEE ICRA and Living Machines CSN, a senior editor for the International Journal of Robotics Research and an editorial board member for Bioinspiration and Biomimetics (IOP).

Dr. Cutkosky’s awards include a Fulbright Faculty Chair (Italy 2002), Fletcher Jones and Charles M. Pigott Chairs at Stanford University, an NSF Presidential Young Investigator award, and a Times Magazine Best Innovation award (2006). He and his students have received over 20 best paper awards in major robotics journals and conferences. He is a fellow of ASME and IEEE and a member of Sigma Xi.



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Pioneer in Robotics and Automation Award



Bruno Siciliano

“For fundamental contributions to robotics research in the areas of manipulation and control, human–robot cooperation, and service robotics”

Bruno Siciliano is Professor of Robotics in the Department of Electrical Engineering and Information Technology at the University of Naples Federico II. He is also Honorary Professor of Óbuda University, where he holds the Kálmán Chair. His research interests include robot manipulation and control, human–robot cooperation, and service robotics. He has co-authored/co-edited 25 books, more than 130 journal papers and 300 conference papers/book chapters. He has delivered more than 30 keynotes, 150 invited lectures and seminars at institutions worldwide, and he has been the recipient of several awards. He is a Fellow of IEEE, ASME, IFAC and AAIA. He is Co-Editor of the Springer Tracts in Advanced Robotics series, the Springer Proceedings in Advanced Robotics series, and has served on the Editorial Boards of several journals as well as Chair or Co-Chair for numerous international conferences. He co-edited the Springer Handbook of Robotics, which received the AAP PROSE Award for Excellence in Physical Sciences & Mathematics. His team has been granted more than 25 European projects, including a Synergy Grant and an Advanced Grant from the European Research Council. He has served the IEEE Robotics and Automation Society as President, Vice-President for Technical Activities and for Publications, AdCom member and Distinguished Lecturer.



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IEEE RAS George Saridis Leadership Award in Robotics and Automation



Jaydev P. Desai

“For Foundational Research in Medical Robotics and Swarm Robotics and Service in Society Management.”

Dr. Jaydev P. Desai is currently a Professor at Georgia Tech in the Wallace H. Coulter Department of Biomedical Engineering and holds the G.P. “Bud” Peterson and Valerie H. Peterson Faculty Professorship in Pediatric Research. He is the Associate Chair for Undergraduate studies in BME at GT, founding Director of the Georgia Center for Medical Robotics (GCMR), and an Associate Director of the Institute for Robotics and Intelligent Machines (IRIM). He completed his undergraduate studies from the Indian Institute of Technology, Bombay, India, in 1993. He received his MA in Mathematics in 1997 and MSE and Ph.D. in Mechanical Engineering and Applied Mechanics in 1995 and 1998 respectively, all from the University of Pennsylvania. He was also a Post-Doctoral Fellow in the Division of Engineering and Applied Sciences at Harvard University.

He is a recipient of several NIH R01 grants, NSF CAREER award, and was the lead inventor on the “Outstanding Invention in the Physical Science Category” at the University of Maryland, College Park, where he was formerly employed. He is also the recipient of the Ralph R. Teeter Educational Award and the 2021 IEEE Robotics and Automation Society (RAS) Distinguished Service Award. He has over 200 publications, is the founding Editor-in-Chief of the Journal of Medical Robotics Research, and Editor-in-Chief of the four-volume Encyclopedia of Medical Robotics. His current research interests are primarily in the areas of image-guided surgical robotics, pediatric robotics, endovascular robotics, and rehabilitation and assistive robotics. He is a Fellow of IEEE, ASME, and AIMBE.



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IEEE RAS Distinguished Service Award



Venkat N. Krovi

“In recognition of his distinguished leadership, outstanding service, and innovative contributions to IEEE RAS Conferences and Technical Activities”

Prof. Venkat N. Krovi (FASME, SM IEEE) is currently the Michelin Endowed SmartState Chair Professor of Vehicle Automation at Clemson University – International Center for Automotive Research. His research focuses on intelligent modulation of distributed physical-power-interactions (motions/forces) between humans and autonomous-systems to unlock the “power of the many”. Research activities focus on the life-cycle treatment (design, modeling, analysis, control, implementation and verification) of a new generation of ConnectedAutonomy systems for realizing Human-Autonomy synergy in emerging automotive-, plant-automation-, co-robotics-, and defense- applications. He currently serves as the Editor-in-Chief of the ASME Journal of Mechanisms and Robotics and was the Founding EiC of the SAE Journal of Connected and Automated Vehicles. He has also taken significant leadership roles within multiple professional societies (IEEE/ASME/SAE) including service on the Executive Committee of the IEEE Robotics and Automation Society and supporting development of the 2020 US Robotics Roadmap.



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IEEE RAS Distinguished Service Award



Marcia O'Malley

“For outstanding service as Editor-in-Chief of the RAS Conference Editorial Board and various contributions to the haptics community”

Marcia O'Malley is the Thomas Michael Panos Family Professor in Mechanical Engineering, Computer Science, Electrical and Computer Engineering, and Bioengineering at Rice University, and she is currently serving as Chair of the Department of Mechanical Engineering. She received her BS in Mechanical Engineering from Purdue University, and her MS and PhD in Mechanical Engineering from Vanderbilt University. Her research is in the areas of haptics and robotic rehabilitation, with a focus on the design and control of wearable robotic devices for training and rehabilitation. At Rice, she has been recognized with Rice's Presidential Award for Mentoring, the Graduate Student Association Faculty Teaching and Mentoring Award, and the Rice University Faculty Award for Excellence in Research, Teaching, and Service. O'Malley was a recipient of both the ONR Young Investigator award and the NSF CAREER Award. Her research has been recognized with Best Paper Awards in the IEEE Transactions on Haptics and the IEEE/ASME Transactions on Mechatronics. She has served the IEEE Robotics and Automation Society in a number of roles, including past chair of the Technical Committee on Haptics (2010-2012), Associate Editor-in-Chief of the IEEE Transactions on Haptics (2020-2023), and Editor-in-Chief of the IEEE ICRA Conference Editorial Board (2022-2024). She is a Fellow of the American Society of Mechanical Engineers, the Institute of Electrical and Electronics Engineers, and the American Institute for Medical and Biological Engineering.



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IEEE RAS Early Academic Career Award in Robotics and Automation



Pulkit Agrawal

“For pioneering contributions to self-supervised robot learning and advancing sensorimotor control for contact-rich, dynamic, and dexterous tasks”

Pulkit Agrawal is an Assistant Professor in the Department of Electrical Engineering and Computer Science at MIT, where he directs the Improbable AI Lab. He is interested in robotics and learning methods for control. Pulkit’s work received the Best Paper Award at the Conference on Robot Learning 2021 and the Best Student Paper Award at the Conference on Computer Supported Collaborative Learning 2011. He is a recipient of Sony Faculty Research Award, Salesforce Research Award, Amazon Research Award, and a Fulbright fellowship. Before joining MIT, Pulkit received his Ph.D. from UC Berkeley and a Bachelor’s degree from IIT Kanpur, where he was awarded the Directors Gold Medal.



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IEEE RAS Early Academic Career Award in Robotics and Automation



Roberto Calandra

“For contributions to touch sensing, processing, and their application to manipulation”

Roberto Calandra is a Full (W3) Professor at the Technische Universität Dresden, where he leads the LASR Lab. Previously, he founded at Meta AI (formerly Facebook AI Research) the Robotic Lab in Menlo Park. Prior to that, he was a Postdoctoral Scholar at the University of California, Berkeley (US) in the Berkeley Artificial Intelligence Research (BAIR) Lab. His education includes a Ph.D. from TU Darmstadt (Germany), a M.Sc. in Machine Learning and Data Mining from Aalto university (Finland), and a B.Sc. in Computer Science from the Università degli studi di Palermo (Italy). His scientific interests are broadly at the conjunction of Robotics and Machine Learning, with the goal of making robots more adaptable and useful in the real world. Current research includes touch sensing and processing, robotic manipulation, and reinforcement learning.



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IEEE RAS Early Academic Career Award in Robotics and Automation



Josie Hughes

“Fundamental contributions to soft robot design and embodied intelligence”

Josie Hughes is an Assistant Professor at EPFL where she established the CREATE Lab in the Institute of Mechanical Engineering in 2021. She undertook her undergraduate, masters and PhD studies at the University of Cambridge, joining the Bio-inspired Robotics Lab (BIRL). Her PhD focused on examining the role of passivity in bio-inspired manipulators, and methodologies for exploiting morphology soft large area soft sensing. Following this, she worked as a postdoctoral associate at the Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology in USA in the Distributed Robotics Lab. Her research focuses on developing novel design paradigms for designing robot structures that exploit their physicality and interactions with the environment. This includes the development of robotic hands, soft manipulators and automation systems for applications focused on sustainability and science. Her group explore applications for agri-food, human collaboration, robot scientists and also environmental monitoring. Her work has been published in journals including Science Robotics and Nature Machine Intelligence, and she has won numerous International Robotics Competitions Awards.



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IEEE RAS Early Academic Career Award in Robotics and Automation



Lerrel Pinto

*“For pioneering contributions in
self-supervised robot learning”*

Lerrel Pinto is an Assistant Professor of Computer Science at NYU. His research focuses on machine learning for robots. He received a Ph.D. degree from CMU after which he did a Postdoc at UC Berkeley. His research on robot learning has received best paper awards at ICRA 2016 and RSS 2023, and finalist at IROS 2019, and CoRL 2022. Lerrel has received the Packard Fellowship and was named a TR35 innovator under 35 for 2023. Several of his works have been featured in popular media such as The Wall Street Journal, TechCrunch, MIT Tech Review, Wired, and BuzzFeed among others. His recent work can be found on www.lerrelpinto.com.



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IEEE RAS Early Academic Career Award in Robotics and Automation



Jiangfan Yu

*“For his contribution to the understanding,
adaptive control and translational biomedicine
of micro-/nanorobot swarms”*

Dr. Yu obtained his PhD degree from the Chinese University of Hong Kong, and worked as a postdoctoral fellow in the Chinese University of Hong Kong and University of Toronto, respectively. He is now an Assistant Professor and Presidential Young Fellow in School of Science and Engineering, the Chinese University of Hong Kong, Shenzhen. He is also the Director of the Research Center on Microrobotics, Shenzhen Institute of AI and Robotics for Society (AIRS). His research interests mainly focus on micro/nanorobotics, including their modelling, actuation strategy, swarm behaviors, and biomedical applications. He has published over 60 papers on top journals and international conferences, including Science Robotics, Science Advances, Nature Communications, IJRR, TRO, TMeCh and TASE. He received a series of impactful awards, including IEEE RAS Early Academic Career Award, IEEE 3M-NANO Rising Star Award, Wu Wen Jun AI Science & Technology Award, Baidu Global Chinese Young Scholar in AI, and T-Mech Best Paper Award Finalist.



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**Early Government or Industry Career Award
in Robotics and Automation**



Andy Zeng

“For outstanding contributions to robot learning, with applications in vision and language for manipulation”

Andy Zeng is a Staff Research Scientist at Google DeepMind, where he leads a small team working on self-improving Foundation models in robotics. He received his Bachelors in Computer Science and Mathematics at UC Berkeley, and his PhD in Computer Science at Princeton. He is interested in building algorithms that enable machines to intelligently interact with the world and improve themselves over time. Andy received Best Paper Awards from HRI '24, CoRL '23, ICRA '23, T-RO '20, RSS'19, and has been finalist for paper awards at RSS '23, CoRL '20 - '22, ICRA '20, RSS '19, IROS '18. He led machine learning as part of Team MIT-Princeton, winning 1st place (stow task) at the worldwide Amazon Picking Challenge '17. Andy is a recipient of the Princeton SEAS Award for Excellence, Japan Foundation Paper Award, NVIDIA Fellowship, and Gordon Y.S. Wu Fellowship in Engineering and Wu Prize. His work has been featured in the press, including the New York Times, BBC, and Wired.



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RAS Section Chapter of the Year Award

This Award recognizes an IEEE Robotics & Automation Society Section Chapter which provides outstanding activities and services to its local RAS members in one or more of the following areas: technical meetings, tours and conferences, seminars and/or tutorials, plus other services and activities.

Jordan
IEEE Robotics and Automation Society
Chapter

Chair: Mohammad Salah

RAS Society Student Branch **Chapter of the Year Award**

This Award recognizes an IEEE Robotics & Automation Society Student Branch Chapter which provides outstanding activities and services to its local RAS members in one or more of the following areas: technical meetings, tours and conferences, seminars and/or tutorials, plus other services and activities.

IEEE Robotics and Automation Society
Student Branch Chapter Tafila
Technical University, Jordan

Chair: Hamza Albzour
Co-chair: Abdulqader Dada



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IEEE International Conference on Robotics and Automation Most Influential Paper Award

The award recognizes the most influential paper published in the Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) from approximately 20 years ago, between 1999-2003. Unlike the other RAS best paper awards that attempt to predict the future potential impact of a paper, this award looks back at the actual impact a paper has had.

Movement imitation with nonlinear dynamical systems in humanoid robots

Auke Ijspeert, Stefan Schaal, Jun Nakanishi

Proceedings of the 2002 IEEE International Conference on Robotics and Automation



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IERA AWARD.
Innovation and Entrepreneurship in Robotics and Automation

IEEE/IFR Innovation and Entrepreneurship Award

This award is cosponsored by IEEE Robotics and Automation Society and the International Federation of Robotics. The purpose of the IERA award is to highlight and honor the achievements of the inventors with value creating ideas and entrepreneurs who propel those ideas into world-class products.

FINALISTS

Fourier Intelligence: The Humanoid GR-1

Alex Gu

**Youibot Robotics: Semiconductor FAB Factory Wafer
Box Handling Compound Robot (OW12)**

Xu Bian

Neura Robotics: Cognitive Robotics Platform

David Reger

Realtime Robotics: Optmization

Will Floyd-Jones



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RAS Publication Awards

The RAS publication awards recognize excellence and the best research papers published in the previous calendar year.

King-Sun Fu Memorial IEEE Transactions on Robotics Best Paper Award

***RACER: Rapid Collaborative Exploration with a Decentralized
Multi-UAV System***

Boyu Zhou, Hao Xu, and Shaojie Shen

IEEE Transactions on Robotics;
vol. 39, no. 3, pp. 1816-1835, June 2023

King-Sun Fu Memorial IEEE Transactions on Robotics Best Paper Award- Honorable Mentions

***Global Planning for Contact-Rich Manipulation via Local
Smoothing of Quasi-dynamic Contact Mode***

Tao Pang, Hyung Ju Terry Suh, Lujie Yang, and Russ Tedrake

IEEE Transactions on Robotics;
vol. 39, no. 6, pp. 4691-4711, December 2023



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**King-Sun Fu Memorial
IEEE Transactions on Robotics
Best Paper Award- Honorable Mentions (cont'd)**

**Grasp it Like a Pro 2.0: A Data-Driven Approach Exploiting Basic
Shapes Decomposition and Human Data for
Grasping Unknown Objects**

Alessandro Palleschi, Franco Angelini, Chiara Gabellieri, Do Won Park,
Lucia Pallottino, Antonio Bicchi, and Manolo Garabini

IEEE Transactions on Robotics;
vol. 39, no. 5, pp. 4016-4036, October 2023

**Kinegami: Algorithmic Design of Compliant Kinematic Chains
from Tubular Origami**

Wei-Hsi Chen, Woohyeok Yang, Lucien Peach, Daniel Koditschek,
and Cynthia Sung

IEEE Transactions on Robotics;
vol. 39, no. 2, pp. 1260-1280, April 2023

**ANYexo 2.0: A Fully-Actuated Upper-Limb Exoskeleton for
Manipulation and Joint-Oriented Training in all
Stages of Rehabilitation**

Yves Dominic Zimmermann, Michael Sommerhalder, Peter Wolf,
Robert Riener, and Marco Hutter

IEEE Transactions on Robotics;
vol. 39, no. 3, pp. 2131-2150, June 2023

Perceptive Locomotion through Nonlinear Model Predictive Control

Ruben Grandia, Fabian Jenelten, Shaohui Yang, Farbod Farshidian,
and Marco Hutter

IEEE Transactions on Robotics;
vol. 39, no. 5, pp. 3402-3421, October 2023



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**IEEE Robotics and Automation Letters
Best Paper Award**

Five winners!

KISS-ICP: In Defense of Point-to-Point ICP – Simple, Accurate, and Robust Registration If Done the Right Way

Ignacio Vizzo, Tiziano Guadagnino, Benedikt Mersch, Louis Wiesmann, Jens Behley, and Cyrill Stachniss

*IEEE Robotics and Automation Letters,
vol. 8, no. 2, pp. 1029-1036, Feb. 2023*

Optimally Controlling the Timing of Energy Transfer in Elastic Joints: Experimental Validation of the Bi-Stiffness Actuation Concept

Edmundo Pozo Fortunić, Mehmet C. Yildirim, Dennis Ossadnik, Abdalla Swikir, Saeed Abdolshah, and Sami Haddadin

*IEEE Robotics and Automation Letters,
vol. 8, no. 12, pp. 8106-8113, Dec. 2023*

LONER: LiDAR Only Neural Representations for Real-Time SLAM

Seth Isaacson, Pou-Chun Kung, Mani Ramanagopal, Ram Vasudevan, and Katherine A. Skinner

*IEEE Robotics and Automation Letters,
vol. 8, no. 12, pp. 8042-8049, Dec. 2023*

H2-Mapping: Real-Time Dense Mapping Using Hierarchical Hybrid Representation

Chenxing Jiang, Hanwen Zhang, Peize Liu, Zehuan Yu, Hui Cheng, Boyu Zhou, and Shaojie Shen

*IEEE Robotics and Automation Letters,
vol. 8, no. 10, pp. 6787-6794, Oct. 2023*



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IEEE Robotics and Automation Letters Best Paper Award (cont'd)

Grasping Lightweight Objects With Chat-PM: A Rotorwash-Aware Motion Planning Method

Lixian Zhang, Chengzhe Han, Yimin Zhu, Yifei Dong, Xiaoyu Ji,
Zhenting Zhao, and Jianan Yang

IEEE Robotics and Automation Letters,
vol. 8, no. 12, pp. 8114-8121, Dec. 2023

IEEE Robotics and Automation Letters Best Paper Award- Honorable Mentions

High Precision Leaf Instance Segmentation for Phenotyping in Point Clouds Obtained Under Real Field Conditions

Elias Marks, Matteo Sodano, Federico Magistri, Louis Wiesmann,
Dhagash Desai, Rodrigo Marcuzzi, Jens Behley, Cyrill Stachniss

IEEE Robotics and Automation Letters,
vol. 8, no. 8, pp. 4791-4798, Aug. 2023

Autonomous Navigation With Online Replanning and Recovery Behaviors for Wheeled-Legged Robots Using Behavior Trees

Alessio De Luca, Luca Muratore, Nikos G. Tsagarakis

IEEE Robotics and Automation Letters,
vol. 8, no. 10, pp. 6803-6810, Oct. 2023



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IEEE Robotics and Automation Letters Best Paper Award - Honorable Mentions (cont'd)

The Treachery of Images: Bayesian Scene Keypoints for Deep Policy Learning in Robotic Manipulation

Jan Ole Von Hartz, Eugenio Chisari, Tim Welschhold, Wolfram Burgard,
Joschka Boedecker, Abhinav Valada

IEEE Robotics and Automation Letters,
vol. 8, no. 11, pp. 6931-6938, Nov. 2023

LEAGUE: Guided Skill Learning and Abstraction for Long-Horizon Manipulation

Shuo Cheng, Danfei Xu

IEEE Robotics and Automation Letters,
vol. 8, no. 10, pp. 6451-6458, Oct. 2023

Discwise Active Learning for LiDAR Semantic Segmentation

Ozan Unal, Dengxin Dai, Ali Tamer Unal, Luc Van Gool

IEEE Robotics and Automation Letters,
vol. 8, no. 11, pp. 7671-7678, Nov. 2023



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IEEE Robotics and Automation Letters Outstanding Associate Editors

Rémi Bouteau

Université de Rouen Normandie,
France

Jose Luis Sanchez-Lopez

University of Luxembourg,
Luxembourg

Ahmed H. Qureshi

Purdue University, USA

Damiano Zanotto

Stevens Institute of Technology, USA

Wei Pan

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IEEE Robotics and Automation Magazine Best Paper Award

A Digital Twin of the Research Vessel Gunnerus for Life-cycle Services: Outlining Key Technologies

Houxiang Zhang, Guoyuan Li, Lars Ivar Hatledal, Yingguang Chu, André Ellefsen, Peihua Han, Pierre Major, Robert Skulstad, Tongtong Wang, and Hans Petter Hildre

*IEEE Robotics & Automation Magazine,
vol. 30, no. 3, pp. 30-45, September 2023*

IEEE Robotics and Automation Magazine Distinguished Service Awards

Chin Lillian

University of Texas, Austin USA
Outstanding Reviewer

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Jonathan Kelly

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**IEEE Transactions on
Medical Robotics and Bionics
Best Paper Award**

**Supporting and Stabilizing the Scapulohumeral
Rhythm with a Body- or Robot-Powered
Orthosis**

Anna-Maria Georgarakis, Yves Zimmermann, Peter Wolf,
Marco Hutter, and Robert Riener

IEEE Transactions on Medical Robotics and Bionics;
vol. 4, no. 3, pp. 729-743, August 2022



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Their dedication and hard work is greatly appreciated.

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ICRA 2024 Best Conference Paper Award Finalists

TinyMPC: Model-Predictive Control on Resource-Constrained Microcontrollers

Anoushka Alavilli, Khai Nguyen, Samuel Schoedel, Brian Plancher, and Zachary Manchester

Goal Masked Diffusion Policies for Unified Navigation and Exploration

Ajay Sridhar, Dhruv Shah, Catherine Glossop, and Sergey Levine

Open X-Embodiment: Robotic Learning Datasets and RT-X Models

Sergey Levine, Chelsea Finn, Ken Goldberg, Lawrence Yunliang Chen, Gaurav Sukhatme, Shivin Dass, Lerrel Pinto, Yuke Zhu, Yifeng Zhu, Shuran Song, Oier Mees, Deepak Pathak, Hao-Shu Fang, Henrik Iskov Christensen, Mingyu Ding, Youngwoon Lee, Dorsa Sadigh, Ilija Radosavovic, Jeannette Bohg, Xiaolong Wang, Xuanlin Li, Krishan Rana, Kento Kawaharazuka, Tatsuya Matsushima, Jihoon Oh, Takayuki Osa, Oliver Kroemer, Beomjoon Kim, Edward Johns, Freek Stulp, Jan Schneider, Jiajun Wu, Yunzhu Li, Heni Ben Amor, Lionel Ott, Roberto Martin-Martin, Karol Hausman, Quan Vuong, Pannag Sanketi, Nicolas Heess, Vincent Vanhoucke, Karl Pertsch, Stefan Schaal, Cheng Chi, Chuer Pan, and Alex Bewley

POLITE: Preferences Combined with Highlights in Reinforcement Learning

Simon Holk, Daniel Marta, and Iolanda Leite



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ICRA 2024 Best Conference Paper Award Finalists (cont'd)

Exoskeleton-Mediated Physical Human-Human Interaction for a Sit-to-Stand Rehabilitation Task

Lorenzo Vianello, Emek Baris Kucuktabak, Matthew Short, Clément Lhoste, Lorenzo Amato, Kevin Lynch, and Jose L. Pons

Optimized Design and Fabrication of Skeletal Muscle Actuators for Bio-syncretic Robots

Lianchao Yang, Chuang Zhang, Ruiqian Wang, Yiwei Zhang, and Lianqing Liu

Design and Modeling of a Nested Bi-cavity- based Soft Growing Robot for Grasping in Constrained Environments

Haochen Yong, Fukang Xu, Chenfei Li, Han Ding, and Zhigang Wu

Observer-based Distributed MPC for Collaborative Quadrotor-Quadruped Manipulation of a Cable-Towed Load

Shaohang Xu, Yi'An Wang, Wentao Zhang, Chin Pang Ho, and Lijun Zhu

Censible: A Robust and Practical Global Localization Framework for Planetary Surface Missions

Jeremy Nash, Quintin Dwight, Lucas Saldyt, Haoda Wang, Steven Myint, Adnan Ansar, and Vandi Verma

HEGN: Hierarchical Equivariant Graph Neural Network for 9DoF Point Cloud Registration

Adam Misik, Driton Salihu, Xin Su, Heike Brock, and Eckehard Steinbach

A Trajectory-based Flight Assistive System for Novice Pilots in Drone Racing Scenario

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A Movable Microfluidic Chip with Gap Effect for Manipulation of Oocytes

Shuzhang Liang, Satoshi Amaya, Hirotaka Sugiura, Hao Mo, Yuguo Dai, and Fumihito Arai

Under pressure: learning-based analog gauge reading in the wild

Maurits Reitsma, Julian Keller, Kenneth Blomqvist, and Roland Siegwart

Efficient Composite Learning Robot Control Under Partial Interval Excitation

Tian Shi, Weibing Li, Haoyong Yu, and Yongping Pan

MORALS: Analysis of High-Dimensional Robot Controllers via Topological Tools in a Latent Space

Ewerton Vieira, Aravind Sivaramakrishnan, Sumanth Tangirala, Edgar Granados, Konstantin Mischaikow, and Kostas E. Bekris



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Goal Masked Diffusion Policies for Unified Navigation and Exploration

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Resilient Legged Local Navigation: Learning to Traverse with Compromised Perception End-to-End

Chong Zhang, Jin Jin, Jonas Frey, Nikita Rudin, Matias Mattamala, Cesar Cadena Lerma, and Marco Hutter

VLFM: Vision-Language Frontier Maps for Semantic Navigation

Naoki Yokoyama, Sehoon Ha, Dhruv Batra, Jiuguang Wang, and Bernadette Bucher

Learning Continuous Control with Geometric Regularity from Robot Intrinsic Symmetry

Shengchao Yan, Baohe Zhang, Yuan Zhang, Joschka Boedecker, and Wolfram Burgard

Learning Vision-Based Bipedal Locomotion for Challenging Terrain

Helei Duan, Bikram Pandit, Mohitvishnu S. Gadde, Bart Jaap Van Marum, Jeremy Dao, Chanho Kim, and Alan Fern



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Towards Generalizable Zero-Shot Manipulation via Translating Human Interaction Plans

Homanga Bharadhwaj, Abhinav Gupta, Vikash Kumar, and Shubham Tulsiani

Hearing Touch: Audio-Visual Pretraining for Contact-Rich Manipulation

Jared Meija, Victoria Dean, Tess Hellebrekers, and Abhinav Gupta

DenseTact-Mini: An Optical Tactile Sensor for Grasping Multi-Scale Objects From Flat Surfaces

Won Kyung Do, Ankush Ankush Dhawan, Mathilda Kitzmann, and Monroe Kennedy

SARA-RT: Scaling up Robotics Transformers with Self-Adaptive Robust Attention

Isabel Leal, Krzysztof Choromanski, Deepali Jain, Avinava Dubey, Jacob Varley, Michael S. Ryoo, Yao Lu, Frederick Liu, Vikas Sindhwani, Tamas Sarlos, Kenneth Oslund, Karol Hausman, Quan Vuong, and Kanishka Rao



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ICRA 2024 Best Robotic Manipulation Paper Finalists (cont'd)

Constrained Bimanual Planning with Analytic Inverse Kinematics

Thomas Cohn, Seiji Shaw, Max Simchowitz, and Russ Tedrake

ICRA 2024 Best Human-Robot Interaction Paper Finalists

POLITE: Preferences Combined with Highlights in Reinforcement Learning

Simon Holk, Daniel Marta, and Iolanda Leite

CoFRIDA: Self-Supervised Fine-Tuning for Human-Robot Co-Painting

Peter Schaldenbrand, Gaurav Parmar, Jun-Yan Zhu, James Mccann,
and Jean Oh

MateRobot: Material Recognition in Wearable Robotics for People with Visual Impairments

Junwei Zheng, Jiaming Zhang, Kailun Yang, Kunyu Peng, and
Rainer Stiefelhagen

Robot-Assisted Navigation for Visually Impaired through Adaptive Impedance and Path Planning

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onori, Juan M. Gandarias, and Arash Ajoudani



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ICRA 2024 Best Human-Robot Interaction Paper Finalists (cont'd)

Incremental Learning of Full-Pose Via-Point Movement Primitives on Riemannian Manifolds

Tilman Daab, Noémie Jaquier, Christian R. G. Dreher, Andre Meixner, Franziska Krebs, and Tamim Asfour

Supernumerary Robotic Limbs to Support Post-Fall Recoveries for Astronauts

Erik Ballesteros, Sang-Yoep Lee, Kalind Carpenter, and Harry Asada

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Exoskeleton-Mediated Physical Human-Human Interaction for a Sit-to-Stand Rehabilitation Task

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Intraoperatively Iterative Hough Transform Based In-plane Hybrid Control of Arterial Robotic Ultrasound for Magnetic Catheterization

Zhengyang Li, Magejiang Yeerbulati, and Qingsong Xu

Efficient Model Learning and Adaptive Tracking Control of Magnetic Micro-Robots for Non-Contact Manipulation

Yongyi Jia, Shu Miao, Junjian Zhou, Niandong Jiao, Lianqing Liu, and Xiang Li



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ICRA 2024 Best Medical Robotics Paper Finalists (cont'd)

Colibri5: Real-Time Monocular 5-DoF Trocar Pose Tracking for Robot-Assisted Vitreoretinal Surgery

Shervin Dehghani, Michael Sommersperger, Mahdi Saleh, Alireza Alikhani, Benjamin Busam, Peter Gehlbach, Ioan Iulian Iordachita, Nassir Navab, and M. Ali Nasserri

Hybrid Volitional Control of a Robotic Transtibial Prosthesis using a Phase Variable Impedance Controller

Ryan Posh, Jonathan Allen Tittle, David Kelly, James Schmiedeler, and Patrick M. Wensing

Design and Implementation of A Robotized Hand-held Dissector for Endoscopic Pulmonary Endarterectomy

Runfeng Zhu, Xilong Hou, Wei Huang, Lei Du, Zhong Wu, Hongbin Liu, Henry Chu, and Qing Xiang Zhao

ICRA 2024 Best Mechanisms and Design Paper Finalists

Optimized Design and Fabrication of Skeletal Muscle Actuators for Bio-syncretic Robots

Lianchao Yang, Chuang Zhang, Ruiqian Wang, Yiwei Zhang, and Lianqing Liu

Design and Modeling of a Nested Bi-cavity-based Soft Growing Robot for Grasping in Constrained Environments

Haochen Yong, Fukang Xu, Chenfei Li, Han Ding, and Zhigang Wu



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ICRA 2024 Best Mechanisms and Design Paper Finalists (cont'd)

Lissajous Curve-Based Vibrational Orbit Control of a Flexible Vibrational Actuator with a Structural Anisotropy

Yuto Miyazaki and Mitsuru Higashimori

Dynamic modeling of wing-assisted inclined running with a morphing multi-modal robot

Eric Sihite, Alireza Ramezani, and Gharib Morteza

ICRA 2024 Best Multi-Robot Systems Paper Finalists

Observer-based Distributed MPC for Collaborative Quadrotor-Quadruped Manipulation of a Cable-Towed Load

Shaohang Xu, Yi'An Wang, Wentao Zhang, Chin Pang Ho, and Lijun Zhu

Do We Run Large-scale Multi-Robot Systems on the Edge? More Evidence for Two-Phase Performance in System Size Scaling

Jonas Kuckling, Robin Luckey, Viktor Avrutin, Andrew Vardy, Andrea-giovanni Reina, and Heiko Hamann

Learning for Dynamic Subteaming and Voluntary Waiting in Heterogeneous Multi-Robot Collaborative Scheduling

Williard Joshua Jose and Hao Zhang



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ICRA 2024 Best Multi-Robot Systems Paper Finalists (cont'd)

Asynchronous Distributed Smoothing and Mapping via On-Manifold Consensus ADMM

Daniel Mcgann, Kyle Lassak, and Michael Kaess

Uncertainty-bounded Active Monitoring of Unknown Dynamic Targets in Road-networks with Minimum Fleet

Shuaikang Wang, Yiannis Kantaros, and Meng Guo

ICRA 2024 Best Service Robotics Paper

Censible: A Robust and Practical Global Localization Framework for Planetary Surface Missions

Jeremy Nash, Quintin Dwight, Lucas Saldyt, Haoda Wang, Steven Myint,
Adnan Ansar, and Vandi Verma

Learning to walk in confined spaces using 3D representation

Takahiro Miki, Joonho Lee, Lorenz Wellhausen, and Marco Hutter

Efficient and Accurate Transformer-Based 3D Shape Completion and Reconstruction of Fruits for Agricultural Robots

Federico Magistri, Rodrigo Marcuzzi, Elias Ariel Marks, Matteo Sodano,
Jens Behley, and Cyrill Stachniss

Corrective Planning of Robot Actions with Large Language Models

Frank Joublin, Antonello Ceravola, Pavel Smirnov, Felix Ocker, Joerg
Deigmoeller, Anna Belardinelli, Chao Wang, Stephan Hasler,
Daniel Tanneberg, and Michael Gienger



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ICRA 2024 Best Service Robotics Paper (cont'd)

CalliRewrite: Recovering Handwriting Behaviors from Calligraphy Images without Supervision

Yuxuan Luo, Zekun Wu, and Zhouhui Lian

ICRA 2024 Best Robot Vision Paper

HEGN: Hierarchical Equivariant Graph Neural Network for 9DoF Point Cloud Registration

Adam Misik, Driton Salihu, Xin Su, Heike Brock, and Eckehard Steinbach

Deep Evidential Uncertainty Estimation for Semantic Segmentation under Out-Of-Distribution Obstacles

Siddharth Ancha, Philip Osteen, and Nicholas Roy

NGEL-SLAM: Neural Implicit Representation-based Global Consistent Low-Latency SLAM System

Yunxuan Mao, Xuan Yu, Kai Wang, Yue Wang, Rong Xiong, and Yiyi Liao

SeqTrack3D: Exploring Sequence Information for Robust 3D Point Cloud Tracking

Yu Lin, Zhiheng Li, Yubo Cui, and Zheng Fang

Ultrafast Square-Root Filter-based VINS

Yuxiang Peng, Chuchu Chen, and Guoquan Huang

Universal Visual Decomposer: Long-Horizon Manipulation Made Easy

Zichen Zhang, Yunshuang Li, Osbert Bastani, Abhishek Gupta, Dinesh Jayaraman, Yecheng Jason Ma, and Luca Weihs



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A Trajectory-based Flight Assistive System for Novice Pilots in Drone Racing Scenario

Yuhang Zhong, Guangyu Zhao, Qianhao Wang, Guangtong Xu, Chao Xu, and Fei Gao

Co-Design Optimisation of Morphing Topology and Control of Winged Drones

Fabio Bergonti, Gabriele Nava, Valentin Wüest, Antonello Paolino, Giuseppe L'Erario, Daniele Pucci, and Dario Floreano

FC-Planner: A Skeleton-guided Planning Framework for Fast Aerial Coverage of Complex 3D Scenes

Chen Feng, Haojia Li, Jinqi Jiang, Xinyi Chen, Shaojie Shen, and Boyu Zhou

Time-Optimal Gate-Traversing Planner for Autonomous Drone Racing

Chao Qin, Maxime Simon Joseph Michet, Jingxiang Chen, and Hugh H.-T. Liu

Sequential Trajectory Optimization for Externally-Actuated Modular Manipulators with Joint Locking

Jaeu Choe, Jeongseob Lee, Hyunsoo Yang, Hai-Nguyen (Hann) Nguyen, and Dongjun Lee

Spatial Assisted Human-Drone Collaborative Navigation and Interaction through Immersive Mixed Reality

Luca Morando and Giuseppe Loianno



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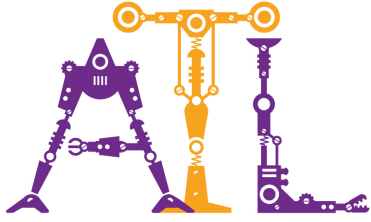
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A horizontal banner with a grey background and a white geometric pattern. On the left, there is a purple square containing a white '@' symbol above a large white '40'. To the right of this square, the text 'Celebrate 40 years of research and deployment of robotics and automation!' is written in a purple, italicized font. Below this text, the dates and location '23–26 SEPTEMBER 2024 • ROTTERDAM, NETHERLANDS' are written in a smaller purple font.

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