

IEEE Robotics & Automation Society

2023

*Awards
Ceremony*

1 June 2023

IEEE International Conference on Robotics & Automation

IEEE Robotics & Automation Society
445 Hoes Lane, Piscataway, NJ USA 08854
www.ieee-ras.org





**IEEE Robotics and Automation Society
President**

Frank Park
Seoul National University, Republic of Korea

**IEEE Robotics and Automation Society
Awards Chair**

Wolfram Burgard—University of Freiburg, Germany

ICRA 2023 General Chair

Kaspar Althoefer
Queen Mary University of London, England

Helge Wurdemann
University College London, England

ICRA 2023 Program Chair

Seth Hutchinson—Georgia Institute of Technology,
USA

ICRA 2023 Program Co-Chairs

Arianna Menciassi
Scuola Superiore Sant'Anna of Pisa, Italy

Ferdinando Rodriguez Y Baena
Imperial College, England

**ICRA Conference Editorial Board
Editor-in-Chief**

Marcia K. O'Malley- Rice University, USA

ICRA 2023 Awards Chair

Maren Bennewitz—University of Bonn, Germany

RAS Staff

Terence C. Martinez—Executive Director
Faith Agnew—Governance and Operations Manager
Paul Goldberg—Program Specialist
Patrick Hanna—Program Specialist
Amy Reeder—Program Specialist



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

The ArmMotus™ EMU

Zen Koh, Fourier Intelligence

The ArmMotus™ EMU is indicated for neurological- and musculoskeletal-induced arm motor dysfunction. The 3D upper limb rehabilitation robotics device is designed to provide personalised and interactive therapy to individuals with upper limb impairments.

Stretch robot

Dr. Aaron Edsinger, CEO and Prof. Charlie Kemp, CTO, Hello Robot

Stretch is a fully-integrated mobile manipulator that includes a mobile base, Cartesian telescoping arm, compliant gripper, pan-tilt 3D depth camera, and onboard computer. Stretch was designed to augment the care of older-adults with physical limitations. We envision a future where millions of Stretch allow older adults around the world to age-in-place at home with safety and dignity.

Explora Robot

Mathew Allan, Co-founder and CTO, Australian Droid and Robot

The Explora robot is an advanced, ready-to-deploy, robotic solution that makes once impossible operations now possible. A concrete example of an application where the Explora has demonstrated commercially available robotics innovation is in the safe re-entry of mining operations after an emergency.

Plato

Thomas HÄHN, United Robotics Group

Plato is the first serving cobot, designed to assist & to augment service and hospitality workers by completing common tasks that interfere with the primary goal of delivering the best customer experience possible. With no programming required and controlled by humans, Plato supports a variety of tasks including delivering food and drinks, bussing and dressing tables, to create better working conditions that allow staff to focus on guests.



See You Next Year!!!

IEEE International Conference on Robotics and Automation (ICRA 2024)

13 May-18 May 2024
Yokohama, Japan



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



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

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 – Seiuemon Inaba
 2004 – Joseph F. Engelberger



Outstanding Associate Editor Award

- **Keehoon Kim**—POSTECH, South Korea
- **Josie Hughes**—EPFL, Switzerland
- **Andrew Sabelhaus**—Boston University, USA
- **Jeffrey Delmerico**—Microsoft, USA
- **Zhe Liu**—The University of Cambridge, England

Outstanding Reviewer Award

- **Patrick Geneva**—University of Delaware, USA
- **Inna Sharf**—McGill University, Canada
- **Armando Alves Neto**—Universidade Federal de Minas Gerais, Brazil
- **Tony Belpaeme**—Ghent University, Belgium



ICRA 2023 Outstanding Planning Paper Finalists

Obstacle-Aware Topological Planning over Polyhedral Representation for Quadrotors

Gao, Junjie; He, Fenghua; Zhang, Wei; Yao, Yu

Learning-based Initialization of Trajectory Optimization for Path-following Problems of Redundant Manipulators

Yoon, Minsung; Kang, Mincheul; Park, Daehyung; Yoon, Sung-eui

A Multi-step Dynamics Modeling Framework For Autonomous Driving In Multiple Environments

Gibson, Jason; Vlahov, Bogdan; Fan, David D; Spieler, Patrick; Pastor, Daniel; Agha-mohammadi, Ali-akbar; Theodorou, Evangelos

ICRA 2023 Outstanding Sensors and Perception Paper Finalists

Towards Consistent Batch State Estimation Using a Time-Correlated Measurement Noise Mode

Yoon, David Juny; Barfoot, Timothy

GMCR: Graph-based Maximum Consensus Estimation for Point Cloud Registration

Gentner, Michael; Murali, Prajval Kumar; Kaboli, Mohsen

Occlusion Reasoning for Skeleton Extraction of Self-Occluded Tree Canopies

Kim, Chung Hee; Kantor, George



2023 IEEE Robotics and Automation Award



Daniela Rus

Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

For pioneering contributions to the design, realization, and theoretical foundations of innovative distributed, networked autonomous systems.

Daniela Rus has made fundamental contributions to the science and engineering of autonomy, with a special focus on robotic interactions. Her work is enabling a future in which machines are pervasively integrated into the fabric of life. She has significantly advanced the ability of machines to reason, learn, and adapt to complex tasks in human-centered environments. The applications of her work include transportation, manufacturing, agriculture, underwater exploration, smart cities, and in-home tasks like cooking. Her recent work focused on computational design and fabrication of robots, as well as safe learning-based control for adaptation to changing conditions place her at the leading edge of her field.

An IEEE Fellow, Rus is the Andrew and Erna Viterbi Professor and director of CSAIL, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA.



IEEE Fellows Elevated as of January 2023

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 2023 Fellow Class



ICRA 2023 Outstanding Multi-Robot Systems Paper Finalists

Graph Neural Networks for Multi-Robot Active Information Acquisition

Tzes, Mariliza; Bousias, Nikolaos; Chatzipantazis, Evangelos;
Pappas, George J.

Distributed Data-Driven Predictive Control for Multi-Agent Collaborative Legged Locomotion

Fawcett, Randall; Amanzadeh, Leila; Kim, Jeeseop;
Ames, Aaron; Akbari Hamed, Kaveh

GoRela: Go Relative for Viewpoint-Invariant Motion Forecasting

Cui, Alexander; Casas Romero, Sergio; Wong, Kelvin;
Suo, Simon; Urtasun, Raquel

ICRA 2023 Outstanding Navigation Paper Finalists

iMODE: Real-time Incremental Monocular Dense Mapping using Neural Field

Matsuki, Hidenobu; Sucar, Edgar; Laidlow, Tristan; Wada,
Kentaro; Scona, Raluca; Davison, Andrew J

SmartRainNet: Uncertainty Estimation For Laser Measurement in Rain

ZHANG, chen; Huang, Zefan; Tung, Beatrix; Ang Jr, Marcelo H;
Rus, Daniela

Online Whole-body Motion Planning for Quadrotor using Multi-resolution Search

Ren, Yunfan; Liang, Siqi; Zhu, Fangcheng; Lu, Guozheng;
Zhang, Fu



ICRA 2023 Outstanding Manipulation Paper Finalists

M-EMBER: Tackling Generalizable Long-Horizon Mobile Manipulation via Factorized Sim-to-Real Transfer
Wu, Bohan; Martín-Martín, Roberto; Fei-Fei, Li

DexGraspNet: A Large-Scale Robotic Dexterous Grasp Dataset for General Objects Based on Simulation
Wang, Ruicheng; Zhang, Jialiang; Chen, Jiayi; Xu, Yinzhen; Li, Puhao; Liu, Tengyu; Wang, He

In-Hand Manipulation in Power Grasp: Design of an Adaptive Robot Hand with Active Surfaces
Cai, Yilin; Yuan, Shenli

ICRA 2023 Outstanding Mechanisms and Design Paper Finalists

New Bracket Polynomials Associated with the General Gough-Stewart Parallel Robot Singularities
Thomas, Federico

A Compact, Two-Part Torsion Spring Architecture
Bons, Zachary Paul; Thomas, Gray; Mooney, Luke; Rouse, Elliott

Contact Force Control with Continuously Compliant Robotic Legs
Bendfeld, Robin; Remy, C. David



2023 IEEE Fellow Class

Aaron M Dollar – For contributions to dexterous grasping and manipulation

Dario Floreano – For contributions to bio-inspired drone development and evolutionary robotics

Antonio Franchi – For contributions to modelling, design, and control for aerial and distributed robotic systems

Kensuke Harada – For contributions to whole-body manipulation for biped humanoid robots

Alois C Knoll – For contributions to Human-Robot Interaction and Neurorobotics

Jana Kosecka – For contributions to robust embodied vision systems and semantic modeling in robotics

Torsten Kroeger – For contributions to real-time motion planning

Cecilia Laschi - For contributions to soft robotics

Karon Maclean – For contributions to the design of haptic communication

Arianna Menciassi – For contributions to the development of robots for minimally invasive surgery

Kazuhiro Nakadai – For contributions to robot audition and computational auditory scene analysis

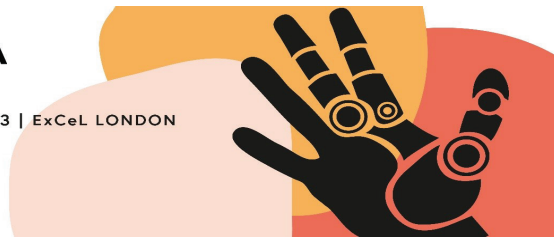
Christian Ott – For contributions to torque-control theory using passive joint elasticity and the wholebody control of humanoids

Jose A Santos-Victor – For contributions to biologically inspired cognitive vision and humanoid robotic systems

Birgit Vogel-Heuser – For contributions to evolvable, adaptable field-level automation architectures for manufacturing systems and logistics

YuMing Zhang – For contributions to robotized welding manufacturing through machine-vision-based intelligence

Li Zhang – For contributions to micro-/nanorobot swarms and platforms for translational biomedicine



Pioneer in Robotics and Automation Award



Harry Asada

"For pioneering contributions to robotics and automation in grasp stability and fixturing, direct-drive, skill transfer, and wearable systems"

H. Harry Asada is Ford Professor of Engineering and Director of the Brit and Alex d'Arbeloff Laboratory for Information Systems and Technology in the Department of Mechanical Engineering, Massachusetts Institute of Technology (MIT), Cambridge, MA. He is a true pioneer in the history of robotics and has made impactful and lasting contributions to the field for over five decades. The unifying theme that spans this tremendous body of work - including grasping and manipulation in the 1970s, direct-drive manipulators in the 1980s, skill acquisition in the 1990s, wearable sensors in the 2000s, and supernumerary limbs in the 2010's - is the pursuit of robot dexterity and the extension of human capabilities. His advocacy for novel design, dynamics modelling, and control of dexterous robots, all inspired by fascinating human functions, has set a benchmark in the field of robotics. His work has also had a significant impact on industry. The Direct-Drive robot that he invented and built in 1982 was successfully commercialized and is still used widely for wafer handling in semi-conductor factories. He is still active in research today, and has been working on Koopman operator theory, assistive robotics for eldercare, supernumerary limbs for astronauts, and multi-cable manipulation for heavy industries.

H. Harry Asada received B.S., M.S. and Ph.D in Mechanical Engineering, all from Kyoto University, Japan, in 1973, 1975 and 1979, respectively. He was a visiting scientist at the Carnegie-Mellon Robotics Institute, an assistant professor at MIT, and an associate professor at Kyoto University, before rejoining MIT in 1989. He received ICRA Best Paper Awards in 1993, 1997, 1999, and 2010, the one at the 2017 IROS, and 7 additional best paper awards. He was the recipient of the Henry Paynter Outstanding Researcher Award from ASME in 1998. More recently he received the 2011 Rufus Oldenburger Medal from ASME, and the Ruth and Joel Spira Award for Distinguished Teaching from the School of Engineering, MIT. He is a fellow of IEEE and ASME.



ICRA 2023 Outstanding Learning Paper Finalists

Code as Policies: Language Model Programs for Embodied Control

Liang, Jacky; Huang, Wenlong; Xia, Fei; Xu, Peng; Hausman, Karol; Ichter, Brian; Florence, Peter; Zeng, Andy

Grounding Language with Visual Affordances over Unstructured Data

Mees, Oier; Borja Diaz, Jessica; Burgard, Wolfram

NeRF2Real: Sim2real Transfer of Vision-guided Bipedal Motion Skills using Neural Radiance Fields

Byravan, Arunkumar; Humplik, Jan; Hasenclever, Leonard; Brussee, Arthur; Nori, Francesco; Haarnoja, Tuomas; Moran, Ben; Bohez, Steven; Sadeghi, Fereshteh; Vujatovic, Bojan; Heess, Nicolas

ICRA 2023 Outstanding Locomotion Paper Finalists

RAMP: Reaction-Aware Motion Planning of Multi-Legged Robots for Locomotion in Microgravity

Ribeiro, Warley Francisco Rocha; Uno, Kentaro; Imai, Masazumi; Murase, Koki; Yoshida, Kazuya

Robust Locomotion on Legged Robots through Planning on Motion Primitive Graphs

Ubellacker, Wyatt; Ames, Aaron

Multi-segmented, Adaptive Feet for Versatile Legged Locomotion in Natural Terrain

Chatterjee, Abhishek; Mo, An; Kiss, Bernadett; Gonen, Emre Cemal; Badri-Spröwitz, Alexander



ICRA 2023 Outstanding Healthcare & Medical Robotics Paper Finalists

MRI-powered Magnetic Miniature Capsule Robot with HIFU-controlled On-demand Drug Delivery

Tiryaki, Mehmet Efe; Dogangün, Fatih; DAYAN, Cem Balda; Wrede, Paul; Sitti, Metin

Real-Time Constrained 6D Object-Pose Tracking of An In-Hand Suture Needle for Minimally Invasive Robotic Surgery

Chiu, Zih-Yun; Richter, Florian; Yip, Michael C

Exploring Robot-Assisted Optical Coherence Elastography for Surgical Palpation

Chang, Yeonhee; Ahronovich, Elan; Simaan, Nabil; Song, Cheol

ICRA 2023 Outstanding Physical Human-Robot Interaction Paper Finalists

A Control Approach for Human-Robot Ergonomic Payload Lifting

Rapetti, Lorenzo; Sartore, Carlotta; Elobaid, Mohamed; Tirupachuri, Yeshasvi; Draicchio, Francesco; Kawakami, Tomohiro; Yoshiike, Takahide; Pucci, Daniele

Learning from Physical Human Feedback: An Object-Centric One-Shot Adaptation Method

Shek, Alvin; Su, Bo Ying; Chen, Rui; Liu, Changliu

Interactive Object Segmentation in 3D Point Clouds

Kontogianni, Theodora; Celikkan, Ekin; Tang, Siyu; Schindler, Konrad



Pioneer in Robotics and Automation Award

Tsuneo Yoshikawa

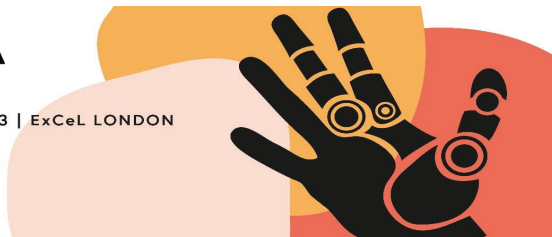


For pioneering contributions to the understanding of the kinematics, dynamics, and control of complex robotic systems, including haptics

Tsuneo Yoshikawa received the B.S. and M.S. degrees in Precision Engineering, and the Ph.D. degree from Kyoto University. Since 1969 he worked as Research Assistant, Associate Professor, and Professor at Kyoto University, and became Professor Emeritus in 2005. Meanwhile, he held parallel appointments as Resident Research Associate at NASA Marshall Space Flight Center, USA (1973-1975), and as Associate Professor and Professor at Institute of Space and Astronautical Science, Japan (1982-1988). In Ritsumeikan University, Prof. Yoshikawa served as Professor, and then Chair Professor (2005-2013).

Prof. Yoshikawa's fields of research span from large-scale systems, robust control, nonlinear control in control theory to redundancy, manipulability, force control, tele-operation, and haptics in robotics. He is the author of "Foundations of Robotics" (MIT Press, 1990). He received numerous honors and awards including ASME-JDSMC Best Paper Award (1995), IEEE-ICRA Best Conference Paper Award (1997), and Fanuc FA Robot Foundation Best Paper Award (2005).

He served as President of Robotics Society of Japan (2003-2005), and is Honorary Member of Robotics Society of Japan, Fellow of JSME, and Fellow of IEEE. Prof. Yoshikawa is a recipient of the Order of the Sacred Treasure, Gold Rays with Neck Ribbon (April 2022).



IEEE RAS George Saridis Leadership Award in Robotics and Automation

Satoshi Tadokoro



*For inclusive leadership as RAS
President and for the visionary and
strategic leadership of the rescue
robotics research community*

Satoshi Tadokoro (M'89 - SM'06 - F'09) graduated from the University of Tokyo in 1984. He was an associate professor in Kobe University in 1993-2005, and has been a Professor of Tohoku University since 2005. He was a Vice/Deputy Dean of Graduate School of Information Sciences in 2012-14, and is the Director of Tough Cyberphysical AI Research Center since 2019 in Tohoku University. He has been the President of International Rescue System Institute since 2002, and was the President of IEEE Robotics and Automation Society in 2016-17. He served as the Program Manager of MEXT DDT Project on rescue robotics in 2002-07, and was the Project Manager of Japan Cabinet Office ImPACT Tough Robotics Challenge Project on disaster robotics in 2014-19 having 62 international PIs and 300 researchers that created Cyber Rescue Canine, Dragon Firefighter, etc. His research team in Tohoku University has developed various rescue robots, two of which called Quince and Active Scope Camera are widely recognized for their contribution to disaster response including missions in the Fukushima-Daiichi NPP nuclear reactor buildings.

IEEE Fellow, RSJ Fellow, JSME Fellow, and SICE Fellow.



ICRA 2023 Outstanding Deployed Systems Paper Finalists

**FRIDA: A Collaborative Robot Painter with a
Differentiable, Real2Sim2Real Planning Environment**
Schaldenbrand, Peter; McCann, James; Oh, Jean

**GUTS: Generalized Uncertainty-Aware Thompson
Sampling for Multi-Agent Active Search**
Bakshi, Nikhil Angad; Gupta, Tejus; Ghods, Ramina;
Schneider, Jeff

ICRA 2023 Outstanding Dynamics and Control Paper Finalists

**Nonlinear Model Predictive Control of a 3D Hopping
Robot: Leveraging Lie Group Integrators for
Dynamically Stable Behaviors**
Csomay-Shanklin, Noel; Dorobantu, Victor; Ames, Aaron

**Robust, High-Rate Trajectory Tracking on Insect-Scale
Soft-Actuated Aerial Robots with
Deep-Learned Tube MPC**
Tagliabue, Andrea; Hsiao, Yi-Hsuan; Fasel, Urban; Kutz,
J. Nathan; Brunton, Steven; Chen, YuFeng; How, Jonathan

**Autonomous Drifting with 3 Minutes of Data via
Learned Tire Models**
Djeumou, Franck; Goh, Jon; Topcu, Ufuk;
Balachandran, Avinash



ICRA 2023 Outstanding Automation Paper Finalists

Towards Open-Set Material Recognition using Robot Tactile Sensing

Liu, Kun-Hong; Yang, Qianhui; XIE, Yu; Huang, Xiangyi

Target-Aware Implicit Mapping for Agricultural Crop Inspection

Hatem Fakhroldeen, Gabriella Pizzuto,

Kelly, Shane; Riccardi, Alessandro; Marks, Elias Ariel; Magistri, Federico; Guadagnino, Tiziano; Chli, Margarita; Stachniss, Cyrill

Systematically Comparing Growth and Irrigation Performance:

The AlphaGarden vs. Professional Horticulturalists

Adebola, Simeon Oluwafunmilore; Parikh, Rishi; Presten, Mark; Sharma, Satvik; Aeron, Shrey; Rao, Ananth; Mukherjee, Sandeep; Qu, Tomson; Wistrom, Tina; Solowjow, Eugen; Goldberg, Ken



IEEE RAS Distinguished Service Award

Fumihito Arai



For his leadership as Vice President for Technical Activities and his continued service in support of in RAS committees conference

Fumihito Arai is Professor at Department of Mechanical Engineering, The University of Tokyo. He is mainly engaging in the research field of micro- and nano-scales robotics and automation, bio-robotics, micro- and nano-mechatronics, MEMS, microTAS, and biomedical applications. He received Dr. of Engineering from Nagoya University in 1993. Since 1994, he was Assistant Professor of Nagoya University. Since 2005, he was Professor of Tohoku University. Since 2010, he was Professor of Nagoya University. Since 2020, he has been Professor of The University of Tokyo. He was the Vice President for Technical Activities, IEEE Robotics and Automation Society (2014-2015, 2016-2017), and RAS AdCom Member (for 2009-2011, 2012-2014, and 2019-2021). Currently, he is RAS AdCom Member for 2022-2024. He was the Program Chair of IROS2019 and contributed many other international conferences. He received 102 awards, for example, the Early Academic Career Award in Robotics and Automation from IEEE Robotics and Automation Society in 2000, Best Conference Paper Award at 2012 IEEE International Conference on Robotics and Automation (ICRA2012), and so on. He is a Fellow of JSME, RSJ, and SICE.



IEEE RAS Distinguished Service Award

Tamim Asfour



For outstanding contributions in support of RAS conferences and committees and as Editor-in-Chief of the IEEE Robotics and Automation Letters

Tamim Asfour is full Professor of Humanoid Robotics and the Director of the High Performance Humanoid Technologies Lab (H2T) of the Institute of Anthropomatics and Robotics at the Karlsruhe Institute of Technology (KIT), Germany. His research focuses on the engineering 24/7 humanoid robotics. In particular, he studies the mechano-informatics of humanoids as the synergetic integration of informatics, artificial intelligence, and mechatronics into complete humanoid robot systems, which learn from humans, experience and interaction with the environment to perform versatile tasks in the real world. Tamim is the developer of the ARMAR humanoid robot family. He has been a visiting professor at Georgia Tech, at the Tokyo University of Agriculture and Technology, and at the National University of Singapore. He is Editor-in-Chief and Editor of the Robotics and Automation Letters (RA-L), the Founding Editor-in-Chief of the IEEE-RAS Humanoids Conference Editorial Board, the president of the Executive Board of the German Robotics Society (DGR), and the scientific spokesperson of the KIT Center "Information · Systems · Technologies" (KCIST).
www.humanoids.kit.edu



ICRA 2023 Awards

Creating a world class technical program for ICRA requires the contributions of many. With the following awards, IEEE RAS recognizes individuals who provided outstanding contributions to the ICRA Conference Editorial Board, which is responsible for reviewing submissions to ICRA.

ICRA 2023 Outstanding Paper Finalists

Distributed Data-Driven Predictive Control for Multi-Agent Collaborative Legged Locomotion

Fawcett, Randall; Amanzadeh, Leila; Kim, Jeeseop; Ames, Aaron; Akbari Hamed, Kaveh

Proficiency Self-Assessment without Breaking the Robot: Anomaly Detection using Assumption-Alignment Tracking from Safe Experiments

Cao, Xuan; Crandall, Jacob W.; Pedersen, Ethan; Gautam, Alvika; Goodrich, Michael A.

D2In-Hand Manipulation in Power Grasp: Design of an Adaptive Robot Hand with Active Surfaces

Cai, Yilin; Yuan, Shenli

ICRA 2023 Outstanding Student Paper Finalists

M-EMBER: Tackling Generalizable Long-Horizon Mobile Manipulation via Factorized Sim-to-Real Transfer

Wu, Bohan; Martín-Martín, Roberto; Fei-Fei, Li

Occlusion Reasoning for Skeleton Extraction of Self-Occluded Tree Canopies

Kim, Chung Hee; Kantor, George

Robust Locomotion on Legged Robots through Planning on Motion Primitive Graphs

Ubellacker, Wyatt; Ames, Aaron



RAS Awards

Nominate a Colleague for an RAS Award!

Deadline: 1 August 2023

Nominations can be submitted on-line or by email
Please see the RAS website for more details

www.ieee-ras.org



IEEE RAS Distinguished Service Award

Dong-Soo Kwon



*For his scientific leadership and
continued outstanding activities in
support of RAS committees
and conferences*

Professor Kwon Dong-Soo is a renowned figure in the field of mechanical engineering and robotics. He received his B.S. degree in mechanical engineering from Seoul National University, Korea, in 1980, his M.S. degree in mechanical engineering from KAIST, Daejeon, Korea, in 1982, and his Ph.D. degree in robotics from the Georgia Institute of Technology, Atlanta, in 1991. He worked as a Research Staff Member at the Oak Ridge National Laboratory from 1991 to 1995. Since 1997, he has been a professor of mechanical engineering and the Director of Center for Future Medical Robotics and Human-Robot Interaction Research Center at KAIST.

He was the Chairman of the Korean Society of Medical Robotics and currently serves as an honorary chairman. In addition, he is a senior member of IEEE and an academician at the National Academy of Engineering of Korea (NAEK).

Professor Kwon has also held numerous leadership positions in professional organizations, including serving as an IEEE RAS AdCOM member representing the Asia Pacific region from 2014 to 2019. He has also held several positions in IEEE conferences, including program chair for the IEEE/RSJ International Conference on Intelligent Robots and Systems in 2016 and general chair for the IEEE World Haptics Conference in 2013. He has also served on the editorial board of the Advanced Robotics Journal and has been a guest editor for several journals.

On October 26, 2022, he was awarded the IEEE IROS Harashima Innovation Technology Award for his contributions to the field of robotics. In addition to his academic roles, he founded and is currently the CEO of the ROEN Surgical Inc. Which specializes in developing medical robots for minimally invasive surgeries.



IEEE RAS Early Academic Career Award in Robotics and Automation



*Katherine
Driggs-Campbell*

*For contributions to the design of
autonomous systems that oper-
ate in the real-world and interact
safely with people*

Katie Driggs-Campbell is currently an assistant professor and Bruning Family Faculty Fellow in the Department of Electrical and Computer Engineering at the University of Illinois at Urbana-Champaign. She is also affiliated with the Department of Computer Science, Coordinated Science Laboratory, Center for Autonomy, Discovery Partners Institute, and Center for Digital Agriculture. Prior to joining Illinois, she received a B.S.E. with honors from Arizona State University in 2012 and a MS and PhD in Electrical Engineering and Computer Sciences from UC Berkeley in 2015 and 2017, respectively. She was a Postdoctoral Research Scholar at the Stanford Intelligent Systems Laboratory in the Aeronautics and Astronautics Department. Katie now runs the Human-Centered Autonomy Lab, which aims to design safe autonomous systems and robots that can safely interact with people out in the real-world. Her work draws from the fields of learning, decision-making, control, and human factors, and is supported by the National Robotics Initiative 2.0, USDA/NIFA+NSF AI Institute, and industry collaborators in manufacturing and automotive domains. She is also leading the ZJUI/UIUC Joint Research Center for Cyber-physical Manufacturing Networks (CyMaN). Katie received the Demetri Angelakos Memorial Achievement Award from UC Berkeley and is a recent recipient of the NSF CAREER award.



Special Recognition

RAS recognizes the following Administrative Committee (AdCom) Members and Officers whose terms ended in 2022

Their dedication and hard work is greatly appreciated.

Alin Albu-Schaeffer*
Marcelo Ang
Jaydev Desai
Yasuhisa Hasegawa
Yasuhisa Hirata*
Cecilia Laschi

*re-elected for 2023-2025

Special Recognition of the Editor-in-Chief IEEE Transactions on Robotics

Kevin Lynch



IEEE Transactions on Automation Science and Engineering Best Paper Award

*Optimal Control of Wireless Powered Edge
Computing System for Balance Between
Computation Rate and Energy Harvested*

C. Hou and Q. Zhao

*IEEE Transactions on Automation Science and
Engineering*, vol. 20, no. 2, pp. 1108-1124, April
2023

IEEE Transactions on Automation Science and Engineering Best New Application Paper Award

*Anisotropic GPMP2: A Fast Continuous-Time
Gaussian Processes Based Motion Planner for
Unmanned Surface Vehicles in Environments With
Ocean Currents*

J. Meng, Y. Liu, R. Bucknall, W. Guo and Z. Ji

*IEEE Transactions on Automation Science and
Engineering*, vol. 19, no. 4, pp. 3914-3931,
Oct. 2022



IEEE RAS Early Academic Career Award in Robotics and Automation



Abhinav Valada

*For contributions to learning and
perception for robot navigation*

Abhinav Valada is an Assistant Professor and Director of the Robot Learning Lab at the University of Freiburg, Germany. He is a member of the Department of Computer Science, the BrainLinks-BrainTools center, and a founding faculty of the ELLIS Unit Freiburg. Abhinav is a DFG Emmy Noether AI Fellow, a scholar of the ELLIS Society, and co-chair of the IEEE Robotics and Automation Society Technical Committee on Robot Learning. He received his Ph.D. with distinction from the University of Freiburg and his M.S. in Robotics from The Robotics Institute of Carnegie Mellon University. He co-founded and served as the Director of Operations of Platypus LLC, a company developing autonomous robotic boats, and has previously worked at the National Robotics Engineering Center and the Field Robotics Center of Carnegie Mellon University.

Abhinav's research lies at the intersection of robotics, machine learning, and computer vision, with a focus on tackling fundamental robot perception, state estimation, and planning problems to enable robots to operate reliably in complex and diverse domains. He received the NVIDIA Research Award and the AutoSens Most Novel Research Award for his work. Abhinav has developed several innovative techniques for scene understanding, state estimation, and autonomous navigation that have defined the state of the art and ranked at the top of benchmarks. He has also won several major competitions and many aspects of his research have been prominently featured in wider media such as the Discovery Channel, NBC News, and Business Times.



IEEE RAS Early Academic Career Award in Robotics and Automation



Cosimo Della Santina

*For fundamental contributions to
modeling, design, and control of
soft and elastic robots*

Cosimo Della Santina is Assistant Professor at TU Delft and Research Scientist at the German Aerospace Institute (DLR). He received his Ph.D. in robotics (cum laude, 2019) from the University of Pisa. He was a visiting Ph.D. student and a postdoc (2017 to 2019) at the Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology (MIT). He was a senior postdoc (2020) and guest lecturer (2021) at the Department of Informatics, Technical University of Munich (TUM). Cosimo has been awarded euRobotics Georges Giralt Ph.D. Award (2020), the "Fabrizio Flacco" Young Author Award of I-RAS (2019), and he has been a finalist for the European Embedded Control Institute Ph.D. award (2020). He is PI for TU Delft of the European Projects Natural Intelligence and EMERGE, co-director of the Delft AI Lab SELF, and involved in a number of Dutch projects. His research interest is in providing motor intelligence to physical systems, spanning control, machine learning, perception, and design. He and his group primarily focus on various elastic and soft robots, from tentacles to elastic quadrupeds, to robotic hands.



IEEE Robotics and Automation Magazine Best Paper Award

Testing Gecko-Inspired Adhesives With Astrobee
Aboard the International Space Station: Readying the
Technology for Space

**T. G. Chen, A. Cauligi, S. A. Suresh, M. Pavone
and M. R. Cutkosky**

*IEEE Robotics & Automation Magazine,
vol. 29, no. 3, pp. 24-33, Sept. 2022*



IEEE Robotics and Automation Letters Outstanding Associate Editors

Matteo Bianchi
University of Pisa, Italy

Amy LaViers
The RAD Lab, USA

Georgia Chalvatzaki
TU Darmstadt, Germany

Vesna Novak
University of Cincinnati, USA

Hamidreza Kasaei
University of Groningen,
Netherlands

Pierre-Brice Wieber
INRIA Grenoble, France

Kasra Khosoussi
MIT, USA

Damiano Zanotto
Stevens Institute of Technology,
USA

Hyun-Jung Kim
KAIST, South Korea

Zhuoran Zhang
CUHK, China

IEEE Robotics and Automation Letters Outstanding Reviewers

Quentin Boehler
ETH Zurich, Switzerland

Xiaomin Liu
Beihua University, China

Yunteng Cao
MIT, USA

Khadiv Majid
Max Planck Institute, Germany

Simone Fani
University of Pisa, Italy

Guanqiao Shan
University of Toronto, Canada

Kenji Koide
AIST, Japan

Yulun Tian
MIT, USA

Guoyuan Li
NTNU, Norway

Jun Zhang
NTU, Singapore



IEEE RAS Early Academic Career Award in Robotics and Automation

Nikolay Atanasov



*For contributions to the
advancement of autonomous
navigation, simultaneous
localization and mapping, and
active robot perception*

Nikolay A. Atanasov is an Assistant Professor of Electrical and Computer Engineering at the University of California San Diego, La Jolla, CA, USA. He obtained a B.S. degree in Electrical Engineering from Trinity College, Hartford, CT, USA in 2008, and M.S. and Ph.D. degrees in Electrical and Systems Engineering from University of Pennsylvania, Philadelphia, PA, USA in 2012 and 2015, respectively. Dr. Atanasov's research focuses on robotics, control theory, and machine learning with emphasis on active perception problems for autonomous mobile robots. He works on probabilistic models that unify geometric and semantic information in simultaneous localization and mapping (SLAM), robot motion planning and control with safety and stability guarantees, optimal control and reinforcement learning algorithms for minimizing probabilistic model uncertainty, and distributed estimation and decision making in robot teams. Dr. Atanasov's work has been recognized by the Joseph and Rosaline Wolf award for the best Ph.D. dissertation in Electrical and Systems Engineering at the University of Pennsylvania in 2015, the Best Conference Paper Award at the IEEE International Conference on Robotics and Automation (ICRA) in 2017, and the NSF CAREER Award in 2021.



IEEE Robotics and Automation Award for Product Innovation

This award is established to identify a company which made an innovative commercial product using Robotics and Automation Science and Technology.

Energy Robotics GmbH
Stefan Kohlbrecher

Energy Robotics' robot and cloud brain software provide autonomous inspection of industrial sites by fleets of heterogeneous mobile robots



RAS Most Active Technical Committee Award

This Award recognizes outstanding performance by an IEEE Robotics & Automation Society Technical Committee. Factors are: breadth & quality of the TC activities in recruiting members, arranging workshops, tutorials, special issues, and other events.

*Technical Committee on Robotic Hands,
Grasping and Manipulation*

Chairs: Matteo Bianchi, Jeannette Bohg,
Hyungpil Moon, Robert Platt, Rich Walker



IEEE Robotics and Automation Letters Best Paper Award- Honorable Mentions

Efficient Analytical Derivatives of Rigid-Body Dynamics Using Spatial Vector Algebra

Shubham Singh, Ryan P. Russell and Patrick M. Wensing

IEEE Robotics and Automation Letters,
Vol. 7, no. 2, pp. 1776-1783, April 2022.

Performance Improvement of a High-Speed Swimming Robot For Fish-Like Leaping

Di Chen, Zhengxing Wu, Pengfei Zhang, Min Tan and Junzhi Yu

IEEE Robotics and Automation Letters,
Vol. 7, no. 2, pp. 1936-1943, April 2022

A Unified Framework for Large-Scale Occupancy Mapping and Terrain Modeling Using RMM

Xu Liu, Decai Li and Yuqing He

IEEE Robotics and Automation Letters,
Vol. 7, no. 2, pp. 5143-5150, April 2022

Simultaneous Motion Tracking and Joint Stiffness Control of Bidirectional Antagonistic Variable-Stiffness Actuators

Marie Harder, Manuel Keppler, Xuming Meng, Christian Ott, Hannes Höppner and Alexander Dietrich

IEEE Robotics and Automation Letters,
vol. 7, no. 3, pp. 6614-6621, July 2022

A Stack-of-Tasks Approach Combined With Behavior Trees: A New Framework for Robot Control

David Cáceres Domínguez, Marco Iannotta, Johannes A. Stork, Erik Schaffernicht and Todor Stoyanov

IEEE Robotics and Automation Letters,
Vol. 7, no. 4, pp. 12110-12117, Oct. 2022



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

Bimanual Handling of Deformable Objects With Hybrid Adhesion

Amy Kyungwon Han, Amar Hajj-Ahmad and Mark R. Cutkosky

IEEE Robotics and Automation Letters, Vol. 7, no. 2, pp. 5497-5503, April 2022.

CALVIN: A Benchmark for Language-Conditioned Policy Learning for Long-Horizon Robot Manipulation Tasks

Oier Mees, Lukas Hermann, Erick Rosete-Beas and Wolfram Burgard

IEEE Robotics and Automation Letters, Vol. 7, no. 3, pp. 7327-7334, July 2022

TRAVEL: Traversable Ground and Above-Ground Object Segmentation Using Graph Representation of 3D LiDAR Scans

Minho Oh; Euigon Jung; Hyungtae Lim; Wonho Song; Sumin Hu; Eunchang Mason Lee; Junghee Park; Jaekyung Kim; Jangwoo Lee; Hyun Myung

IEEE Robotics and Automation Letters, Vol. 7, no. 3, pp. 7255-7262, July 2022

2.5D Laser-Cutting-Based Customized Fabrication of Long-Term Wearable Textile sEMG Sensor: From Design to Intention Recognition

Hwayeong Jeong, Jirou Feng and Jung Kim

IEEE Robotics and Automation Letters, Vol. 7, no. 4, pp. 10367-10374, Oct. 2022



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 RAS Student Branch Chapter Mar Athanasius College of Engineering

Chair: Deva Darsan

Co-Chair: Praseeda P Kartha

Early Government or Industry Career Award in Robotics and Automation



Dr. Karol Hausman

For major contributions to scalable robot learning algorithms

Karol Hausman is a Senior Research Scientist at Google Brain and an Adjunct Professor at Stanford working on robotics and machine learning. He is interested in enabling robots to acquire general-purpose skills with minimal supervision in the real world. He received his PhD in CS from the University of Southern California and Masters from the Technical University Munich. When he is not debugging robots at Google, he co-teaches Deep Multi-Task and Meta-Learning class at Stanford.



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.

*Backstepping and Sliding-mode Techniques
Applied to an Indoor Micro Quadrotor*

Samir Bouabdallah, Roland Siegwart

Proceedings of the 2005 IEEE International
Conference on Robotics and Automation

Humanoid robot HRP-2

**K. Kaneko; F. Kanehiro; S. Kajita;
H. Hirukawa; T. Kawasaki; M. Hirata; K. Akachi;
T. Isozumi**

Proceedings of the 2004 IEEE International
Conference on Robotics and Automation



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

***Kimera-Multi: Robust, Distributed, Dense Metric-Semantic
SLAM for Multi-Robot Systems***

Yulun Tian, Yun Chang, Fernando Herrera Arias, Carlos Nieto-Granda, Jonathan P. How, and Luca Carlone

IEEE Transactions on Robotics;
Volume 38, Issue 4, pages 2022-2038, August 2022

IEEE Robotics and Automation Letters Best Paper Award *Five winners!*

***Geometric Fabrics: Generalizing Classical Mechanics to
Capture the Physics of Behavior***

Karl Van Wyk; Mandy Xie; Anqi Li; Muhammad Asif Rana; Buck Babich; Bryan Peele; Qian Wan; Iretiayo Akinola; Balakumar Sundaralingam; Dieter Fox; Byron Boots; Nathan D. Ratliff

IEEE Robotics and Automation Letters,
Vol. 7, no. 2, pp. 3202-3209, April 2022