

ICRA 2025 Awards

All papers listed as finalists for topical awards are eligible for the overall Best Paper Awards. Papers with a * are also eligible for the overall Best Student Paper Award.

IEEE ICRA Best Paper Award in Automation Finalists

***In-Plane Manipulation of Soft Micro-Fiber with Ultrasonic Transducer Array and Microscope**

Jieyun Zou, Siyuan An, Mingyue Wang, Jiaqi Li, Yalin Shi,
You-Fu Li, Song Liu

***A Complete and Bounded-Suboptimal Algorithm for a Moving Target Traveling Salesman Problem with Obstacles in 3D**

Anoop Bhat, Geordan Gutow, Bhaskar Vundurthy,
Zhongqiang Ren, Sivakumar Rathinam, and Howie Choset

***Physics-Aware Robotic Palletization with Online Masking Inference**

Tianqi Zhang, Zheng Wu, Yuxin Chen, Yixiao Wang, Boyuan
Liang, Scott Moura, Masayoshi Tomizuka, Mingyu Ding,
and Wei Zhan

Awards Committee: Maria Pia Fanti (Politecnico Di Bari, Italy), Michael Wang
(Great Bay University, China), Fabio Bonsignoro (University of Zagreb, Croatia)



ICRA Best Paper Award on Robot Learning Finalists

Achieving Human Level Competitive Robot Table Tennis

David D'Ambrosio, Saminda Wishwajith Abeyruwan, Laura Graesser, Atil Iscen, Heni Ben Amor, Alex Bewley, Barney J. Reed, Krista Reymann, Leila Takayama, Yuval Tassa, Krzysztof Choromanski, Erwin Coumans, Deepali Jain, Navdeep Jaitly, Natasha Jaques, Satoshi Kataoka, Yuheng Kuang, Nevena Lazic, Reza Mahjourian, Sherry Moore, Kenneth Oslund, Anish Shankar, Vikas Sindhwani, Vincent Vanhoucke, Grace Vesom, Peng Xu, and Pannag Sanketi

***Robo-DM: Data Management For Large Robot Datasets**

Kaiyuan Chen, Letian Fu, David Huang, Yanxiang Zhang, Lawrence Yunliang Chen, Huang Huang, Kush Hari, Ashwin Balakrishna, Ted Xiao, Pannag Sanketi, John Kubiawicz, and Ken Goldberg

***No Plan but Everything under Control: Robustly Solving Sequential Tasks with Dynamically Composed Gradient Descent**

Vito Mengers and Oliver Brock

Awards Committee: Matthew Walter (Toyota Technological Institute at Chicago, USA), Tetsuya Ogata (Waseda University, Japan), Jens Kober (TU Delft, Netherlands)

ICRA Best Paper Award on Human-Robot Interaction - Finalists

***Human-Agent Joint Learning for Efficient Robot Manipulation Skill Acquisition**

Shengcheng Luo, Quanquan Peng, Jun Lv, Kaiwen Hong, Katherine Driggs-Campbell, Cewu Lu, and Yong-Lu Li

***To Ask or Not to Ask: Human-In-The-Loop Contextual Bandits with Applications in Robot-Assisted Feeding**

Rohan Banerjee, Rajat Kumar Jenamani, Sidharth Vasudev, Amal Nanavati, Katherine Dimitropoulou, Sarah Dean, and Tapomayukh Bhattacharjee

***Point and Go: Intuitive Reference Frame Reallocation in Mode Switching for Assistive Robotics**

Allie Wang, Chen Jiang, Michael Przystupa, Justin Valentine, and Martin Jagersand

Awards Committee: *Sonia Chernova (Georgia Institute of Technology, USA), Chad Jenkins (University of Michigan, USA), Paolo Rocco (Politecnico di Milano, Italy), Takayuki Kanda (Kyoto University, Japan)*

ICRA Best Paper Award on Mechanisms and Design - Finalists

*Individual and Collective Behaviors in Soft Robot Worms Inspired by Living Worm Blobs

Carina Kaeser, Junghan Kwon, Elio Challita, Harry Tuazon,
Robert Wood, Saad Bhamla, and Justin Werfel

*Informed Repurposing of Quadruped Legs for New Tasks

Fuchen Chen and Daniel Aukes

*Intelligent Self-Healing Artificial Muscle: Mechanisms for Damage Detection and Autonomous Repair of Puncture Damage in Soft Robotics

Ethan Krings, Patrick Mcmanigal, and Eric Markvicka

Awards Committee: Mark R. Cutkosky (Stanford University, USA), Kenjiro Tadakuma (Osaka University, Japan), John Wen (Rensselaer Polytechnic Institute, USA), Pauline Pounds (University of Queensland, Australia), Cynthia Sung (University of Pennsylvania, USA)

ICRA Best Paper Award in Medical Robotics Finalists

*Image-Based Compliance Control for Robotic Steering of a Ferromagnetic Guidewire

An Hu, Chen Sun, Adam Dmytriw, Nan Xiao, and Yu Sun

*AutoPeel: Adhesion-Aware Safe Peeling Trajectory Optimization for Robotic Wound Care

Xiao Liang, Youcheng Zhang, Fei Liu, Florian Richter, and
Michael C. Yip

*In-Vivo Tendon-Driven Rodent Ankle Exoskeleton System for Sensorimotor Rehabilitation

Juwan Han, Seunghyeon Park, and Keehoon Kim

Awards Committee: *Pietro Valdastrì (University of Leeds, UK), Amy Kyungwon Han (Seoul National University, Korea), Jake Abbott (University of Utah, USA)*

ICRA Best Paper Award on Multi-Robot Systems Finalists

Distributed Multi-Robot Source Seeking in Unknown Environments with Unknown Number of Sources

Lingpeng Chen, Siva Kailas, Srujan Deolasee, Wenhao Luo,
Katia Sycara, and Woojun Kim

***Deploying Ten Thousand Robots: Scalable Imitation Learning for Lifelong Multi-Agent Path Finding**

He Jiang, Yutong Wang, Rishi Veerapaneni, Tanishq Harish
Duhan, Guillaume Adrien Sartoretti, and Jiaoyang Li

***Multi-Nonholonomic Robot Object Transportation with Obstacle Crossing Using a Deformable Sheet**

Weijian Zhang, Charlie Street, and Masoumeh Mansouri

Awards Committee: *Gaurav Sukhatme (University of Southern California, USA), Sabine Hauert (University of Bristol, UK), Alyssa Pierson (Boston University, USA), Mac Schwager (Stanford University, USA), Heiko Hamann (University of Konstanz, Germany)*

ICRA Best Paper Award on Robot Manipulation and Locomotion - Finalists

***Full-Order Sampling-Based MPC for Torque-Level Locomotion Control Via Diffusion-Style Annealing**

Haoru Xue, Chaoyi Pan, Zeji Yi, Guannan Qu, and Guanya Shi

***D(R, O) Grasp: A Unified Representation of Robot and Object Interaction for Cross-Embodiment Dexterous Grasping**

Zhenyu Wei, Zhixuan Xu, Jingxiang Guo, Yiwen Hou, Chongkai Gao, Zhehao Cai, Jiayu Luo, and Lin Shao

***TrophyBot: A Transformable Rolling and Flying Robot with High Energy Efficiency**

Mingwei Lai, Yuqian Ye, Hanyu Wu, Chice Xuan, Ruibin Zhang, Qiuyu Ren, Chao Xu, Fei Gao, and Yanjun Cao

Awards Committee: *Kris Hauser (University of Illinois at Urbana-Champaign, USA), Yu Sun, (University of South Florida, USA), Kensuke Harada (Osaka University, USA)*



ICRA Best Paper Award on Robot Perception Finalists

***MAC-VO: Metrics-Aware Covariance for Learning-Based Stereo Visual Odometry**

Yuheng Qiu, Yutian Chen, Zihao Zhang, Wenshan Wang,
and Sebastian Scherer

***Ground-Optimized 4D Radar-Inertial Odometry Via Continuous Velocity Integration Using Gaussian Process**

Wooseong Yang, Hyesu Jang, and Ayoung Kim

***UAD: Unsupervised Affordance Distillation for Generalization in Robotic Manipulation**

Yihe Tang, Wenlong Huang, Yingke Wang, Chengshu Li, Roy
Yuan, Ruohan Zhang, Jiajun Wu, and Li Fei-Fei

***Awards Committee:** Wolfram Burgard (University of Technology Nuremberg, Germany), Margarita Chli (ETH Zurich, Switzerland and University of Cyprus), Jana Kosecka (George Mason University, USA), Cyrill Stachniss (University of Bonn, Germany)*

ICRA Best Paper Award in Field and Service Robotics - Finalists

*PolyTouch: A Robust Multi-Modal Tactile Sensor for Contact-Rich Manipulation Using Tactile-Diffusion Policies

Jialiang Zhao, Naveen Kuppuswamy, Siyuan Feng,
Benjamin Burchfiel, and Edward Adelson

A New Stereo Fisheye Event Camera for Fast Drone Detection and Tracking

Daniel Rodrigues Da Costa, Maxime Robic, Pascal Vasseur,
and Fabio Morbidi

*Learning-Based Adaptive Navigation for Scalar Field Mapping and Feature Tracking

Jose Fuentes, Paulo Padrao, Abdullah Al Redwan Newaz,
and Leonardo Bobadilla

***Awards Committee:** Peter Corke (Queensland University of Technology, Australia), Venkat Krovi (Clemson University, USA), Brendan Englot (Stevens Institute of Technology, USA), Genya Ishigami (Keio University, Japan)*



ICRA Best Paper Award on Planning and Control Finalists

***SELP: Generating Safe and Efficient Task Plans for Robot Agents with Large Language Models**

Yi Wu, Zikang Xiong, Yiran Hu, Shreyash Sridhar Iyengar, Nan Jiang, Aniket Bera, Lin Tan, and Suresh Jagannathan

***Marginalizing and Conditioning Gaussians Onto Linear Approximations of Smooth Manifolds with Applications in Robotics**

Zi Cong Guo, James Richard Forbes, and Timothy Barfoot

***No Plan but Everything under Control: Robustly Solving Sequential Tasks with Dynamically Composed Gradient Descent**

Vito Mengers and Oliver Brock

***Awards Committee:** Ram Vasudevan (University of Michigan, USA), Lydia Tapia (University of New Mexico, USA), Guillaume Sartoretti (National University of Singapore, Singapore)*

ICRA Best Paper Award Additional Finalists

Papers with a * are also eligible for the Best Student Paper Award.

***MiniVLN: Efficient Vision-And-Language Navigation by Progressive Knowledge Distillation**

Junyou Zhu, Yanyuan Qiao, Siqi Zhang, Xingjian He, Qi Wu,
and Jing Liu

***RoboCrowd: Scaling Robot Data Collection through Crowdsourcing**

Suvir Mirchandani, David D. Yuan, Kaylee Burns, Md Sazzad
Islam, Zihao Zhao, Chelsea Finn, and Dorsa Sadigh

How Sound-Based Robot Communication Impacts Perceptions of Robotic Failure

Jai'La Lee Crider, Rhian Preston, and Naomi T. Fitter

***Obstacle-Avoidant Leader Following with a Quadruped Robot**

Carmen Scheidemmann, Lennart Werner, Victor Reijgwart,
Andrei Cramariuc, Joris Chomarat, Jia-Ruei Chiu,
Roland Siegwart, and Marco Hutter

***Dynamic Tube MPC: Learning Error Dynamics with Massively Parallel Simulation for Robust Safety in Practice**

William Compton, Noel Csomay-Shanklin, Cole Johnson,
and Aaron Ames

Awards Committee: Mark Yim (University of Pennsylvania,
USA), Arianna Menciassi (Scuola Superiore Sant'Anna, Italy),
Hanna Kurniawati (Australian National University, Australia),
Allison Okamura (Stanford University, USA)



ICRA Best Paper Award Additional Finalists

Papers with a * are also eligible for the Best Student Paper Award.

***Bat-VUFN: Bat-Inspired Visual-And-Ultrasound Fusion Network for Robust Perception in Adverse Conditions**

Gyeongrok Lim, Jeong-Ui Hong, and Hyeon Min Bae

***TinySense: A Lighter Weight and More Power-Efficient Avionics System for Flying Insect-Scale Robots**

Zhitao Yu, Josh Tran, Claire Li, Aaron Weber, Yash P. Talwekar, and Sawyer Fuller

***TSCLIP: Robust CLIP Fine-Tuning for Worldwide Cross-Regional Traffic Sign Recognition**

Guoyang Zhao, Fulong Ma, Weiqing Qi, Chenguang Zhang, Yuxuan Liu, Ming Liu, and Jun Ma

***Geometric Design and Gait Co-Optimization for Soft Continuum Robots Swimming at Low and High Reynolds Numbers**

Yanhao Yang and Ross Hatton

Awards Committee: Mark Yim (University of Pennsylvania, USA), Arianna Menciassi (Scuola Superiore Sant'Anna, Italy), Hanna Kurniawati (Australian National University, Australia), Allison Okamura (Stanford University, USA)

ICRA Best Paper Award Additional Finalists

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***ShadowTac: Dense Measurement of Shear and Normal Deformation of a Tactile Membrane from Colored Shadows**

Giuseppe Vitrani, Basile Pasquale, and Michael Wiertlewski

***Occlusion-aware 6D Pose Estimation with Depth-guided Graph Encoding and Cross-semantic Fusion for Robotic Grasping**

Jingyang Liu, Zhenyu Lu, Lu Chen, Jing Yang, Chenguang Yang

***Stable Tracking of Eye Gaze Direction During Ophthalmic Surgery**

Tinghe Hong, Shenlin Cai, Boyang Li, and Kai Huang

***Configuration-Adaptive Visual Relative Localization for Spherical Modular Self-Reconfigurable Robots**

Yuming Liu, Qiu Zheng, Yuxiao Tu, Yuan Gao, Guanqi Liang, and Tin Lun Lam

***Realm: Real-Time Line-Of-Sight Maintenance in Multi-Robot Navigation with Unknown Obstacles**

Ruofei Bai, Shenghai Yuan, Kun Li, Hongliang Guo, Wei-Yun Yau, and Lihua Xie

Awards Committee: Mark Yim (University of Pennsylvania, USA), Arianna Menciassi (Scuola Superiore Sant'Anna, Italy), Hanna Kurniawati (Australian National University, Australia), Allison Okamura (Stanford University, USA)

