

Welcome to the IEEE Robotics & Automation Society!



<http://www.ieee-ras.org>

IEEE

- The world's largest technical professional association fostering technological innovation and excellence for the benefit of humanity
 - More than 400,000 members
 - Includes 100,000 student members
 - More than 150 countries
- Organized into 10 geographical regions
 - 330 sections
 - ~1900 student branches
 - ~2000 chapters



IEEE

- Composed of 10 technical divisions
 - Technical areas ranging from aerospace systems, computers, and control systems to electron devices, power & energy, and signal processing
 - 38 societies and 7 technical councils



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 - IEEE Robotics and Automation Society is in Division X



IEEE Robotics and Automation Society (RAS)

- RAS has more than 13,000 members in 110 countries
 - Roughly half in the Americas
 - A quarter in Europe and the Middle East
 - A quarter in Asia and Oceania
- Undergraduate students make up about 15% of the RAS membership



ICRA 2010
Anchorage, Alaska

RAS Technical Field of Interest

- The Society is interested in both **applied and theoretical issues** in robotics and automation.



iRobot PackBot

- **Robotics:** include **intelligent machines and systems** used, for example, in space exploration, human services, or manufacturing



KAIST Hubo

- **Automation:** use of **automated methods** in various applications, for example, factory, office, home, or transportation systems **to improve performance and productivity.**



ABB FRIDA



RST PenelopeCS

Field of Interest of Robotics and Automation Society

The Society strives to **advance innovation, education, and fundamental and applied research in Robotics and Automation.**

Robotics focuses on systems incorporating **sensors and actuators** that **operate autonomously** or semi-autonomously in cooperation with humans. Robotics research emphasizes **intelligence and adaptability** to cope with unstructured environments.

Automation research **emphasizes efficiency, productivity, quality, and reliability**, focusing on systems that **operate autonomously, often in structured environments** over extended periods, and on the explicit structuring of such environments.

What Does RAS Do?

- RAS fosters research and education, professional development and industrial and commercial applications of R&A through:
 - Conferences
 - Workshops and tutorials
 - Publications
 - Technical committees
 - Local and student chapters
 - Summer schools
 - Other activities

RAS Conferences

- ICRA (International Conference on Robotics and Automation): RAS's flagship conference
- Established in 1984
- ICRA 2014: Hong Kong
- ICRA 2015: Seattle, WA USA
 - Over 3000 participants!
 - Organized entirely by women!
- ICRA 2016: Stockholm, Sweden



RAS Conferences

■ Fully sponsored (9)

- **ARSO** IEEE Workshop on **Advanced Robotics and its Social Impacts**
- **CASE** IEEE International Conference on **Automation Science and Engineering**
- **CIRA** IEEE International Symposium on **Computational Intelligence in Robotics and Automation**
- **Haptics** IEEE **Haptics** Symposium
- **Humanoids** IEEE-RAS International Conference on **Humanoid Robots**
- **ICRA** **IEEE International Conference on Robotics and Automation**
- **ISAM** IEEE International Symposium on **Assembly and Manufacturing**
- **MEMS** IEEE International Conference on **Micro Electro Mechanical Systems**
- **SSRR** IEEE International Symposium on **Safety, Security, and Rescue Robotics**

ICRA 2016 will be held in Stockholm, Sweden on 16-20 May 2016

<http://www.ieee-ras.org/calendar>

RAS Conferences

■ Partially sponsored (15)

70% MFI	IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems
60% WHC	World Haptics Conference
50% BioRob	IEEE International Conference on Biomedical Robotics and Biomechatronics
50% ICORR	IEEE International Conference on Rehabilitation Robotics
50% CYBER	IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems
50% ROBIO	IEEE International Conference on Robotics and Biomimetics
40% HRI	ACM/IEEE International Conference on Human-Robot Interaction
35% RO-MAN	IEEE International Symposium on Robot and Human Interactive Communication
33% AIM	IEEE/ASME International Conference on Advanced Intelligent Mechatronics
30% ICAL	IEEE International Conference on Automation and Logistics
30% ICIA	IEEE International Conference on Information and Automation
25% IROS	IEEE/RSJ International Conference on Intelligent Robots and Systems
25% ICMA	IEEE International Conference on Mechatronics and Automation
25% SII	IEEE/SICE International Symposium on System Integration
20% MHS	International Conference on Micro-Nano Mechatronics and Human Science

IROS 2016 will be held in Daejeon, South Korea

9-14 October 2016

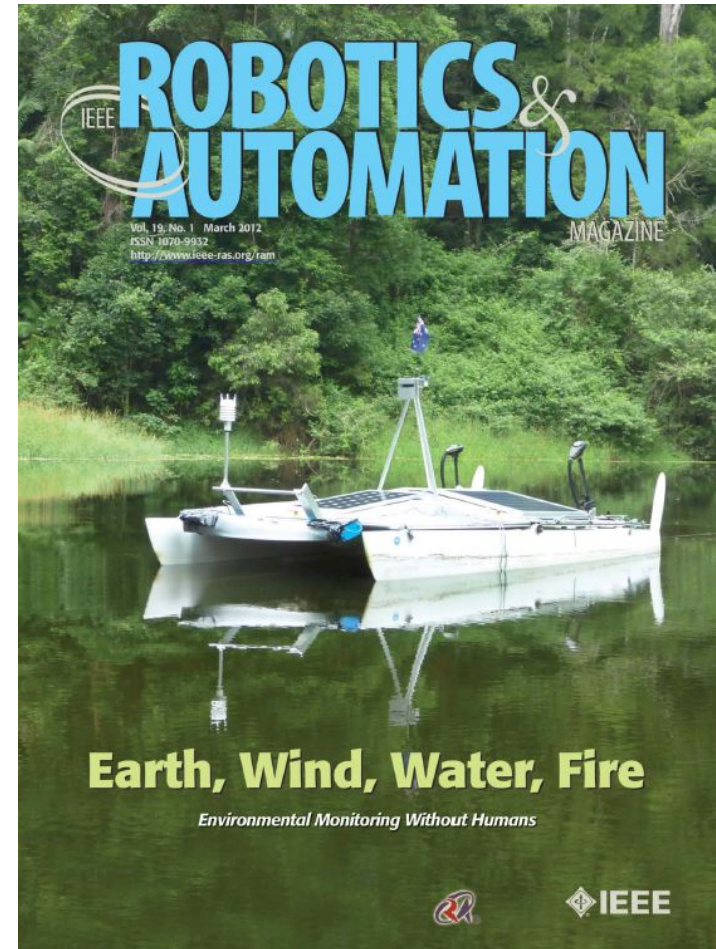
10+ technically cosponsored conferences

RAS Publications

- *IEEE Robotics and Automation Magazine*
- Three Journals:
 - *IEEE Transactions on Robotics*
 - *IEEE Transactions on Automation Science and Engineering*
 - *IEEE Robotics & Automation Letters*
- Co-sponsor of 7 other journals with other IEEE and non-IEEE organizations (+ 5 technical co-sponsorships)
- RAS Society Members
 - Serve as editors and reviewers
 - Oversee both technical and financial aspects of RAS publications

IEEE Robotics and Automation Magazine

- Implementations of cutting-edge Robotics and Automation technology
- Tutorials by leading researchers and educators
- Research, education, industry, student, and society news
- Special issues on topics of current interest



RAS Co-sponsored Journals

- *IEEE Transactions on Haptics*
- *IEEE/ASME Transactions on Mechatronics*
- *IEEE/ASME Journal of MEMS*
- *IEEE Transactions on NanoBioscience*
- *IEEE Transactions on Nanotechnology*
- *IEEE Sensors Journal*
- *IEEE Systems Journal*



Technical Activities

- IEEE-RAS Distinguished Lecturers
 - RAS – travel support for IEEE-RAS Distinguished Lecturers to visit local chapters
 - Distinguished Lecturers available from Asia & Oceania, the Americas, and Europe
- IEEE-RAS Technical Committees
 - 40 committees to promote technical activities across the diverse field of robotics and automation
 - Opportunity to network with colleagues who share similar research interests
 - Activities include workshops & tutorials, conferences, special issues of journals, web portal

<http://www.ieee-ras.org/technical>

RAS Technical Committees

- Aerial Robotics and Unmanned Aerial Vehicles
- Agricultural Robotics
- Algorithms for Planning and Control of Robot Motion
- Automation in Logistics
- Autonomous Ground Vehicles and Intelligent Transportation Systems
- Bio Robotics
- Computer & Robot Vision
- Energy, Environment, and Safety Issues in R&A
- Haptics
- Human-Robot Interaction & Coordination
- Humanoid Robotics
- Marine Robotics
- Micro/Nano R&A
- Mobile Manipulation
- Model-Based Optimization for Robotics
- Networked Robots
- Performance Evaluation and Benchmarking of R&A Systems
- Rehabilitation & Assistive Robotics
- Robot Ethics
- Robot Learning
- Robotics and Automation in Nuclear Facilities
- Safety Security and Rescue Robotics
- Semiconductor Manufacturing Automation
- Service Robotics
- Smart Buildings
- Soft Robotics
- Software Engineering for R&A
- Space Robotics
- Surgical Robotics
- Sustainable Production Automation
- Telerobotics

Member Activities:

Local and Student Chapters

- Local communities of R&A professionals and students
 - Networking opportunities, professional development, continuing education
 - 180+ local chapters worldwide (including student chapters)
- Chapter support
 - RAS chapter grant, \$2000/year to support local activities (mini-symposia, competitions, workshops, etc.)
 - Distinguished Lecturer travel to local chapter (up to \$3000)
 - “Chapter of the Year” Award: \$1000 grant, most active chapter

Industrial Activities

- IEEE/IFR Forum on Innovation and Entrepreneurship in Robotics and Automation
 - Co-sponsored by International Federation of Robotics
 - Case studies in innovation and entrepreneurship
 - IERA Award – \$2000
- Industry Forum at ICRA
- Standards – help drive industry forward and develop new products
- Technology Watch and Industrial Activities columns
 - *Robotics and Automation Magazine*



KIVA Mobile Fulfillment System
2008

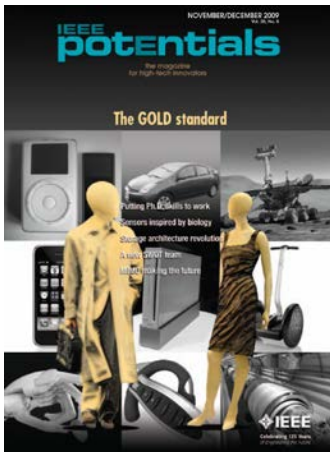
<http://www.ieee-ras.org/industrial>

IEEE RAS Membership

- In 2016, IEEE offers a substantially reduced e-membership. IEEE student membership is \$32.00/year (Asia).
- Starting in 2011, RAS reduced its membership fee by more than 50%. Regular membership is just \$9/year and student membership is \$5/year.

IEEE Membership Benefits

- *IEEE Spectrum Magazine*
- *IEEE Potentials Magazine* (students)
- *The Institute Newsletter*
- Networking opportunities for joint research and career development



- * Reduced rates for conference registration *

RAS Membership Benefits

- Eligible for student travel grants and discounted registration fee to attend IEEE International Conference on Robotics and Automation (ICRA)
- Eligible for ICRA author travel award of \$1000 to present papers at ICRA
- Scholarship (reduced student fees) to attend RAS Summer Schools of Robotics for graduate students and post-doctoral students



How to Join IEEE RAS

- Apply online and receive membership number instantly at:

http://www.ieee.org/membership_services/

