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 450,000 members
  - Includes 180,000 student members
  - More than 150 countries
- Organized into 10 geographical regions
  - 344 sections
  - 3651 student branches
  - 2726 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
  - 39 societies and 8 technical councils

IEEE

- Composed of 10 technical divisions
  - Technical areas ranging from aerospace systems, computers, and control systems to electron devices, power & energy, and signal processing
  - 39 societies and 8 technical councils
  - IEEE Robotics and Automation Society is in Division X

IEEE Robotics and Automation Society (RAS)

- RAS has more than 18,000 members in 110 countries
  - 37% in the Americas
  - 26% Europe and the Middle East
  - 37% in Asia and Oceania
- Undergraduate students make up about 28% 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

  ABB FRIDA

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

KAIST Hubo

RST PenelopeCS

IEEE Robotics & Automation Society

IEEE Advancing Technology for Humanity

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.

IEEE
**Robotics &
Automation**
Society

IEEE
*Advancing Technology
for Humanity*

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 2015: Seattle, WA USA
    - Over 3000 participants!
    - Organized entirely by women!
- ICRA 2024: Yokohama, Japan

May 13-17, Yokohama, Japan

IEEE Robotics & Automation Society

IEEE Advancing Technology for Humanity

RAS Conferences

- Fully sponsored (7)

  - ARSO IEEE Workshop on Advanced Robotics and its Social Impacts
  - CASE IEEE International Conference on Automation Science and Engineering
  - Haptics IEEE Haptics Symposium
  - Humanoids IEEE-RAS International Conference on Humanoid Robots
  - **ICRA IEEE International Conference on Robotics and Automation**

  - RoboSoft IEEE International Conference on Soft Robotics
  - SSRR IEEE International Symposium on Safety, Security, and Rescue Robotics

ICRA 2024 will be held in Yokohama, Japan on 13-17 May 2024

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

IEEE
Robotics &
Automation
Society

IEEE
Advancing Technology
for Humanity

RAS Conferences

- Partially sponsored (20)

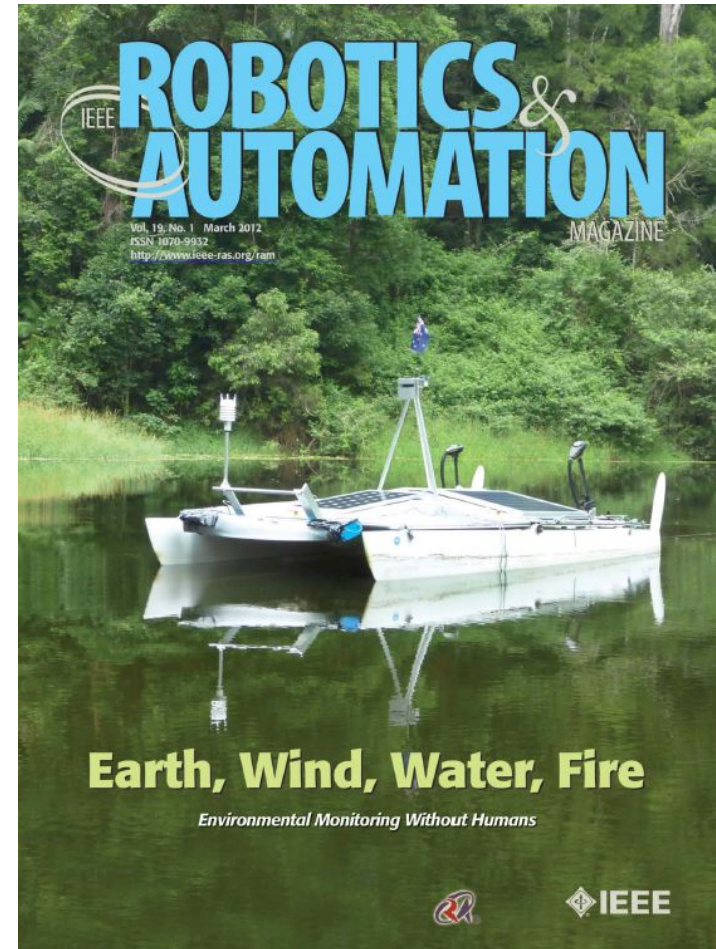|	
MFI	IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems
WHC	World Haptics Conference
BioRob	IEEE International Conference on Biomedical Robotics and Biomechatronics
ICORR	IEEE International Conference on Rehabilitation Robotics
CYBER	IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems
ROBIO	IEEE International Conference on Robotics and Biomimetics
HRI	ACM/IEEE International Conference on Human-Robot Interaction
RO-MAN	IEEE International Symposium on Robot and Human Interactive Communication
AIM	IEEE/ASME International Conference on Advanced Intelligent Mechatronics IEEE
ICAL	International Conference on Automation and Logistics
ICIA	IEEE International Conference on Information and Automation
IROS	**IEEE/RSJ International Conference on Intelligent Robots and Systems** IEEE
ICMA	International Conference on Mechatronics and Automation
SII	IEEE/SICE International Symposium on System Integration
MHS	International Conference on Micro-Nano Mechatronics and Human Science
CBS	IEEE International Conference on Cyborg and Bionic Systems
COINS	IEEE International Conference on Omni-Layer Intelligent Systems
ICMA	IEEE International Conference on Mechatronics and Automation
ICORR	IEEE International Conference on Rehabilitation Robotics
IRC	IEEE International Conference on Robotic Computing
ISR	IEEE International Conference on Intelligence and Safety for Robotics
RCAR	IEEE International Conference on Real-time Computing and Robotics

IEEE Robotics & Automation Society

60+ technically cosponsored conferences

IEEE Advancing Technology for Humanity

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 6 other journals with other IEEE and non-IEEE organizations (+ 8 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 Transactions on NanoBioscience*
- *IEEE Transactions on Nanotechnology*
- *IEEE Sensors Journal*
- *IEEE Systems Journal*
- *IEEE Journal of MicroElectroMechnical System*

and more...

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
  - 45 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 and Automation
- 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

- 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
- Smart Buildings
- Soft Robotics
- Software Engineering for R&A
- Space Robotics
- Surgical Robotics
- Sustainable Production Automation
- Telerobotics
- Wearable Robotics
- and many more!

http://www.ieee-ras.org/technical-committees

IEEE Robotics & Automation Society

IEEE
Advancing Technology for Humanity

Member Activities:
Local and Student Chapters

- Local communities of R&A professionals and students
  - Networking opportunities, professional development, continuing education
  - 500+ local chapters worldwide (including student chapters)
- Chapter support
  - RAS chapter initiative grant, $2000/year to support local activities (mini-symposia, competitions, workshops, etc.)
  - RAS chapter start-up grant, $500 once per chapter to support a new chapter.
  - Distinguished Lecturer travel to local chapter (up to $3000)

http://www.ieee-ras.org/member/chapters

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

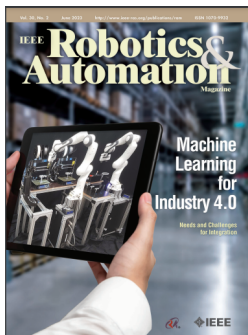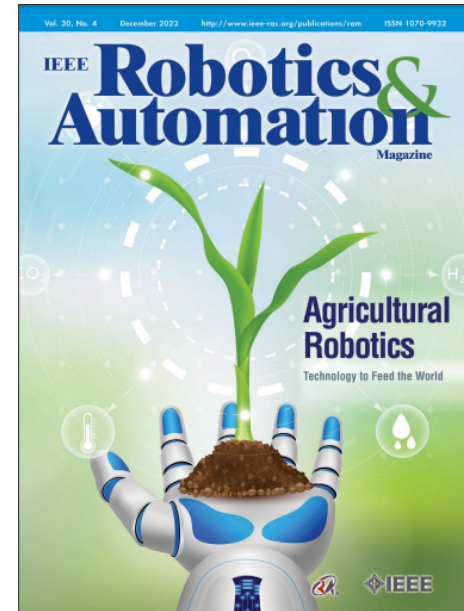*http://www.ieee-ras.org/industrial*

IEEE RAS Membership

- In 2016, IEEE offers a substantially reduced e-membership for certain countries.

- Starting in 2011, RAS reduced its membership fee by more than 50%. Regular membership is just $9/year and student membership is $5/year with an IEEE membership.

https://www.ieee.org/membership/join/emember-countries.html

IEEE Membership Benefits

- *IEEE Robotics and Automation Magazine*
- *IEEE Transactions on Robotics*
- *IEEE Transactions on Automation*
- *Science and Engineering*
- *IEEE Robotics and Automation Letters*
- *RAS Newsletter*
- Society Resource Center
- 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) and other RAS sponsored conferences.

How to Join IEEE RAS

- Apply online and receive membership number instantly at:

https://www.ieee.org/membership-catalog/productdetail/
showProductDetailPage.html?product=MEMRA024