IEEE
**Robotics &
Automation**
Society
®

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Welcome to the
IEEE
Robotics &
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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 423,000 members
  - Includes 98,000 student members
  - More than 160 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
  - 39 societies and 7 technical councils

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  - IEEE Robotics and Automation Society is in Division X

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IEEE Robotics and Automation Society (RAS)

▣ RAS has more than 14,000 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

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RAS Technical Field of Interest

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

iRobot PackBot

KAIST Hubo

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

- **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

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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.

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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

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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 2016: Stockholm, Sweden
- ICRA 2017: Singapore
- ICRA 2018: Brisbane, Australia

ICRA2018
21-25 May 2018
Brisbane Convention & Exhibition Centre
www.ICRA2018.org

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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 2018 will be held in Brisbane, Australia on 21-25 May 2017

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

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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 2018 will be held in Madrid, Spain

1-5 October 2018

10+ technically cosponsored conferences

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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 (+ 9 technical co-sponsorships)
- RAS Society Members
  - Serve as editors and reviewers
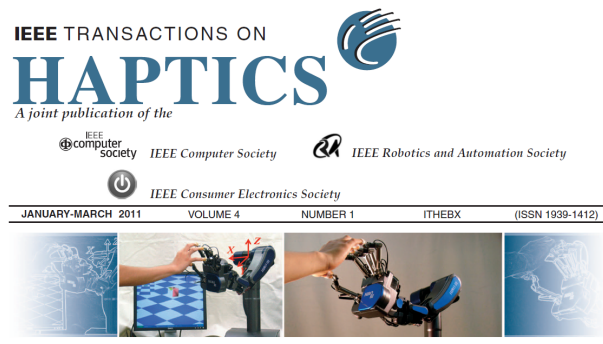 - Oversee both technical and financial aspects of RAS publications

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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

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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 Transactions on Cognitive & Dev. Sys.*
- *IEEE Transactions on Intelligent Vehicles*

IEEE TRANSACTIONS ON
HAPTICS
A joint publication of the
IEEE Computer Society   IEEE Robotics and Automation Society
IEEE Consumer Electronics Society

| JANUARY-MARCH 2011 | VOLUME 4 | NUMBER 1 | ITHEBX | (ISSN 1939-1412) |

IEEE/ASME TRANSACTIONS ON
MECHATRONICS
A Joint Publication of
IEEE Industrial Electronics Society   IEEE Robotics and Automation Society   ASME Dynamic Systems and Control Division

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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

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RAS Technical Committees

- Aerial Robotics and Unmanned Aerial Vehicles
- Agricultural Robotics
- Algorithms for Planning and Control of Robot Motion
- Automation in Health Care Management
- Automation in Logistics
- Autonomous Ground Vehicles and Intelligent Transportation Systems
- Bio Robotics
- Cognitive Robotics
- Computer & Robot Vision
- Cyborg & Bionic Systems
- Energy, Environment, and Safety Issues in R&A
- Haptics
- Human-Robot Interaction & Coordination
- Humanoid Robotics
- Marine Robotics
- Mechanisms and Design
- Micro/Nano R&A
- Mobile Manipulation
- Model-Based Optimization for Robotics

- Multi-Robot Systems
- Neuro-Robotics Systems
- Performance Evaluation and Benchmarking of R&A Systems
- Rehabilitation & Assistive Robotics
- RoboCup
- 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
- Whole Body Control

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

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Member Activities:
Local and Student Chapters

- Local communities of R&A professionals and students
  - Networking opportunities, professional development, continuing education
  - 275+ 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

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

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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*
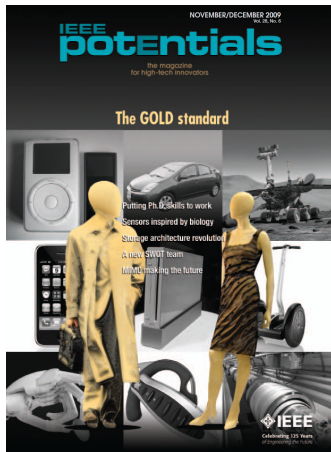

KIVA Mobile Fulfillment System 2008

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

IEEE RAS Membership

- In 2017, 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.

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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 *

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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

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How to Join IEEE RAS

- Apply online and receive membership number instantly at:

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