IEEE/RSJ International Conference on Intelligent Robots and Systems
October 7-12, 2012 Vilamoura, Algarve [Portugal]

Celebrating 25 Years of IROS

General Chairs:
Anibal T. De Almeida and Urbano Nunes
University of Coimbra, Portugal
Plenary Talks and Round Table

- Robot & Remote-Controlled Machine Technology for Response Against Accident of Nuclear Power Plants and Toward Their Decommission
  (Prof. Hajime Asama)

- Surgical Robotics - Achievements and Challenges
  (Prof. Paolo Dario)

- European Robotics Research: Achievements and challenges
  (Dr. Libor Kral)

- Today’s DARPA Robotics Programs: Towards a Symbiosis of Productivity and Protection
  (Dr. Gill A. Pratt)

- Round Table: Robotics R&D Future Research Directions
Accident of Fukushima Daiichi Nuclear Power Plant

- Earthquake (14:47)
- Loss of Power Supply
- Activation of Emergency Diesel Generator
- SCRAM
- Stop Reactors
- Tsunami
- Damage of Fuel Tanks and Generators
- SBO (Situation of Black Out) (15:39)
- Failure of Cooling System of Reactors and Fuel Storage Pool
- Loss of Cooling Water
- Melt down
- Hydrogen Explosion (Mar. 12-15, Unit 1, 2, 3, 4)

[Map of Fukushima Daiichi Nuclear Power Plant]

Seismic Center

[Map of Japan with nuclear plants marked]

Nuclear plants in Japan
- Nuclear emergency situation declared
- East China Sea
- Pacific Ocean
- Chine
- North Korea
- South Korea

By (name of presenter)

THE UNIVERSITY OF TOKYO

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Presenter at the podium, audience in the foreground.
Pre-Historic Surgery

- Brain surgery: the oldest practiced medical art
- Trephination or grind holes in the skull by using stone instruments
- This procedure was aimed at relieving demon spirits, treating skull fractures, or removing bone splinters
- Ample evidence of brain surgery dating back to the Neolithic period (Late Stone Age – 10,000 B.C.)
- Unearthed remains of successful brain operations were found in France at one of Europe’s noted archeological digs
- Evidence of brain surgery was not limited to Europe
- Pre-Incan civilization used brain surgery as an extensive practice as early as 2,000 B.C.

Here too was used for mental illnesses, headaches, organic diseases, osteomyelitis, as well as head injuries

Drilled skull, Iron age.
The perimeter of the hole in the skull is rounded off by in-growth of new bony tissue, indicating that the patient survived the operation.
What comes next

- ICT Call 10 immediately
- Horizon 2020 entering serious preparation phase
- Robotics PPP under preparation
Machine-human body dynamical symbiosis

There is a third interaction modality, where the human body and the machine establish a dynamic interaction, giving rise to emerging behaviors.

- Running
- Cycling
- Having fun
Past, Today and Future

Master-Slave Manipulator
www.arm.gov/Science_and_Technology/History

Ill-defined Problem
Unstructured Environment

Industrial Robots

Well-defined Problem
Structured Environment

www.paro.jp

TIVOLI
MARINA VILAMOURA
• 1801 papers submitted from 53 Countries, 806 accepted, to be presented in 11 Parallel sessions

• 60 Video Contributions submitted, 39 selected

• 13 Silver Jubilee Video Contributions, 11 selected

• 49 Workshop and Tutorial proposals, 33 selected
Paper Submissions by Country

Submissions (53 Countries)

- Japan
- USA
- Germany
- France
- South Korea
- China
- Spain
- Italy
- Portugal
- Canada
- Australia
- UK
- Switzerland
- Brazil
- Taiwan
- Sweden
- Iran
- Netherlands
- Mexico
- India
Accepted Papers by Region
75% of paper submissions

<table>
<thead>
<tr>
<th>Region</th>
<th>Submissions</th>
<th>Accepted</th>
<th>Rejected</th>
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<tr>
<td>Japan</td>
<td>351</td>
<td>147</td>
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<td>Europe</td>
<td>709</td>
<td>368</td>
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<tr>
<td>USA</td>
<td>301</td>
<td>177</td>
<td>114</td>
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</tbody>
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Papers Accepted by Country

- United States of America
- Japan
- Germany
- France
- Switzerland
- Korea, South
- Italy
- Canada
- Australia
- United Kingdom
- China
- Spain
- Portugal
- Taiwan
- Netherlands
- Sweden
- Singapore
- Austria
- Norway
- Brazil
- Poland
- Czech Republic
- Finland
- Belgium
- Turkey
- Israel
- India
- Denmark
- South Africa
- Slovenia
- Serbia
- New Zealand
- Malaysia
- Lebanon
- Iran
- Greece
- Croatia
- Colombia
- Algeria
Number of papers & acceptance rate of IROS
Attendees rate against accepted papers

IROS2012: > 1,400 (as of 7 Oct. 2012)
• Over 1535 IROS2012 attendees (including Volunteers, IEEE, Exhibitors)
  – 646 students

• 650 attendees of Workshops and Tutorials
  – 29 Workshops and 2 Tutorials
  – 1 free special invited workshop on EU R&D Program

• 33 exhibitors
1535 Participants

- Student Member IEEE/RSJ
- Member IEEE/RSJ
- Life Member, IEEE/RSJ
- Student Nonmember
- Nonmember
- Exhibitor
- Volunteer
Special Features

- Video contributions integrated in regular sessions
  - 3 min video presentations
  - Best video award

- Interactive Displays
  - Browsing booths: IROS info, sessions, full paper contents
  - Interactive sessions (Selected videos)

- Proceedings on your iPad, smartphone or PDA
  - Local network mirror: http://10.1.1.1
Key topics discussed:

- Vision of industry leaders about the future of robotics

- Personal robots are seen as a major market change for the near future, but security issues arising from the interaction of robots with common persons may be still an issue.

- The role of open source vs. proprietary software in robotics

About 100 attendees
3 teams

- LUHbots, Leibniz University Hannover, Germany
- Team Ephesus, Sabanci University, Turkey
- b-it-bots, Bonn-Rhein-Sieg U. of Applied Sciences, Germany

19 participants

**Goal:** push ahead robotics research through competitions and benchmarking using common challenges

33 Exhibitors
Celebrating 25 Years

- Special Jubilee Session

- Jubilee Video
  - Presentation of 5 minute professional videos
  - Special session with Jubilee
  - Best IROS Jubilee Video Award

- Award Ceremony
• Pre-College Student Event
  – 40 students from schools of Algarve Region
  – invited to visit the Exhibitors Areas
  – contact with the latest robotics-related technologies
  – attend some plenary sessions and robotics competitions.
  – special session on how to become a robot creator.
Social Events

- **Opening Ceremony** Monday, October 8, 9:00-9:30.
- **Welcome Reception** Monday, October 8, 19:00-21:00.
- **RAS events:**
  - **Women’s Lunch** Tuesday, October 9, 12:45-13:45.
  - **Gold Lunch** On Wednesday, October 10, 12:45-13:45,
  - **Lunch with Leaders** October 10, 12:45-13:45.
- **Gala Dinner** Wednesday, October 10, evening by the pool.
- **Silver Jubilee Celebrations and Award Ceremony**
  Thursday, October 11, at 10:00 a.m.
- **Farewell Lunch** Thursday, October 11, at 12:30
Organizing Institutions:
- University of Coimbra, Portugal
- Institute for Systems and Robotics (ISR)

Program Chair: Prof. Eugenio Guglielmelli
Vice Chair: Prof. Kazuhiro Kosuge
Vice & Financial Chair: Dr. Paulo Peixoto

Program Cochairs:
- Dr. Dino Accoto and Dr. Christian Laugier

ICRB:
- Nancy Amatto, Editors and Associate Editors

IROS Silver Jubilee Committee Chair
- Tzyh-Jong Tarn, Washington University, USA
Organizing Committee

- **Workshops/Tutorial Chairs**
  - Jorge Lobo, University of Coimbra, Portugal;
  - Peter Corke, Queensland University of Technology, Australia;
  - Radu Bogdan Rusu, Willow Garage/Stanford University, USA;

- **Organized/Special Sessions**
  - Stefano Stramigioli (chair), Twente University, The Netherlands;
  - Jianwei Zhang, University of Hamburg, Germany;
  - Kazuhito Yokoi, IS/AIST, Japan

- **Interactive Sessions Co-chairs**
  - Yasuhisa Hasegawa, Tsukuba Univ., Japan;
  - Estela Bicho, University of Minho, Portugal

- **Video Sessions Chair**
  - Raffaella Carloni, Twente University, The Netherlands

- **Local Arrangements**
  - João Barreto (chair), University of Coimbra, Portugal;
  - Paulo Menezes, University of Coimbra, Portugal
• **Publications Chair:** Jorge Batista, University of Coimbra, Portugal

• **Exhibitions Committee**
  Lino Marques (Chair), University of Coimbra, Portugal; Raj Madhavan, University of Maryland, College Park, USA

• **Competitions Co-chairs**
  Pedro Lima, Instituto Superior Técnico, UTL, Portugal; Rui Cortesão, University of Coimbra, Portugal

• **Awards Committee**
  Shigeki Sugano (Chair), Waseda University, Japan; Martin Buss, Technical University of Munich, Germany; Lynne Parker, University of Tennessee, USA

• **Registration Chair:** Rui Rocha, University of Coimbra, Portugal

• **Publicity Co-chairs**
  Yasushi Nakauchi, University of Tsukuba, Japan; Luis Gomes, University Nova de Lisboa, Portugal

• **Information Technology Chair:** Rui Araújo, University of Coimbra, Portugal
Gold Corporate Sponsors exhibiting:

- adept: mobile robots
- Willow Garage

Silver Corporate Sponsors exhibiting:

- ALDEBARAN Robotics
- NATIONAL INSTRUMENTS
- Reflexxes
- SCHUNK
Thank you for Your Participation!

But… Enjoy the Farewell Lunch and the Remaining Workshops