IROS 2012 October 7-12

Intelligent Robots and Systems
IEEE/RSJ International Conference
Vila Moura, Algarve [Portugal]

Robotics for Quality of Life and Sustainable Development

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

IEEE RSJ SICE NTF SICROS · U C · Universidade de Coimbra ISR Instituto de Sistemas e Robótica

IROS
2012
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IROS 2012
October 7-12

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)

THE UNIVERSITY OF TOKYO

Hajime Asama
Dept. of Precision Engineering
The University of Tokyo

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TIVOLI

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, osteomylitis,** 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
TIVOLI

evrion

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.ani.gov/Science_and_Technology/History

Industrial Robots

Well-defined Problem

Structured Environment

Ill-defined Problem

Unstructured Environment

www.paro.jp

Select

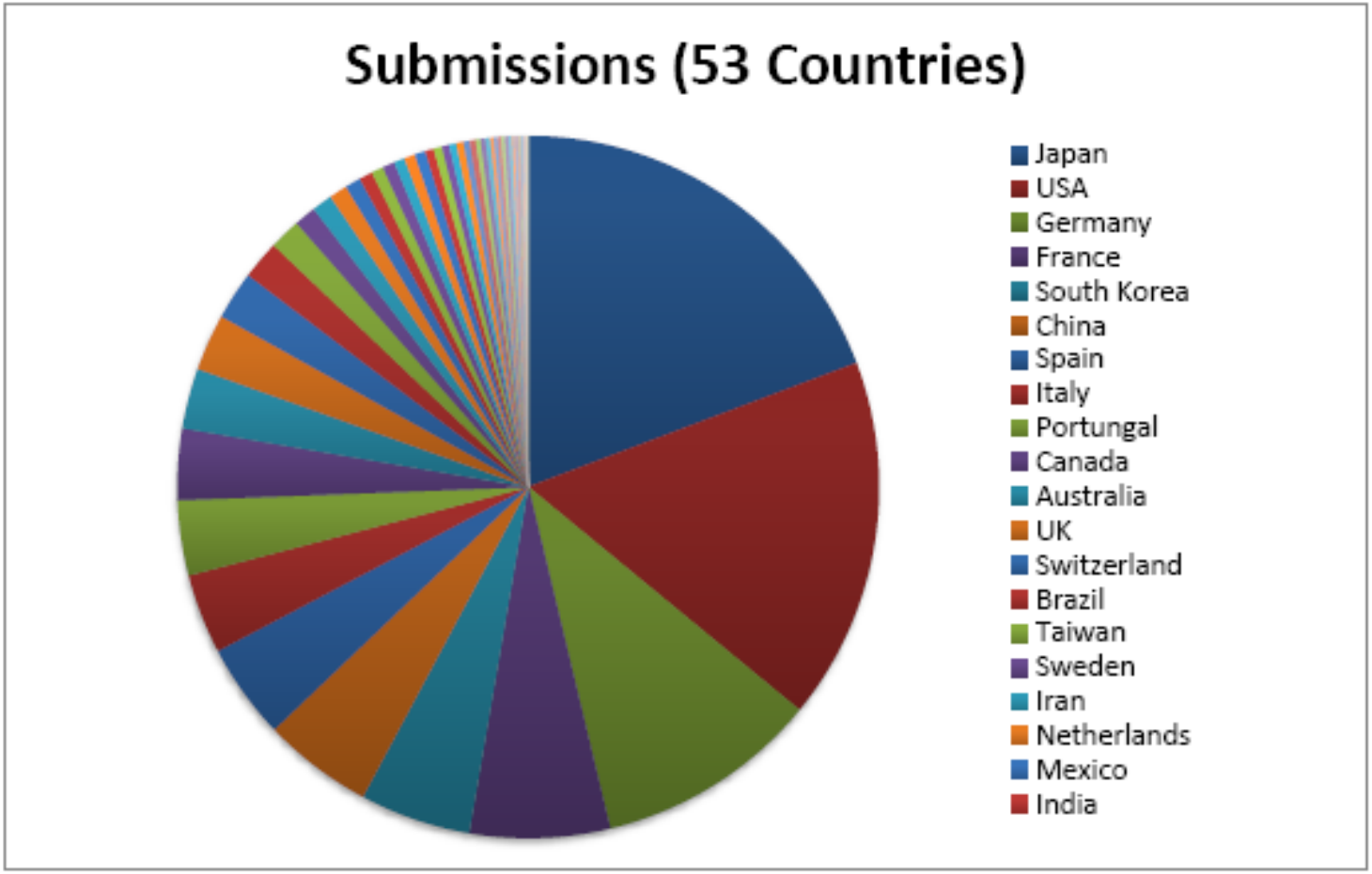
TIVOLI
HOTELS & RESORTS
ROS 2014

IROS 2012
October 7-12

IROS 2012 Numbers

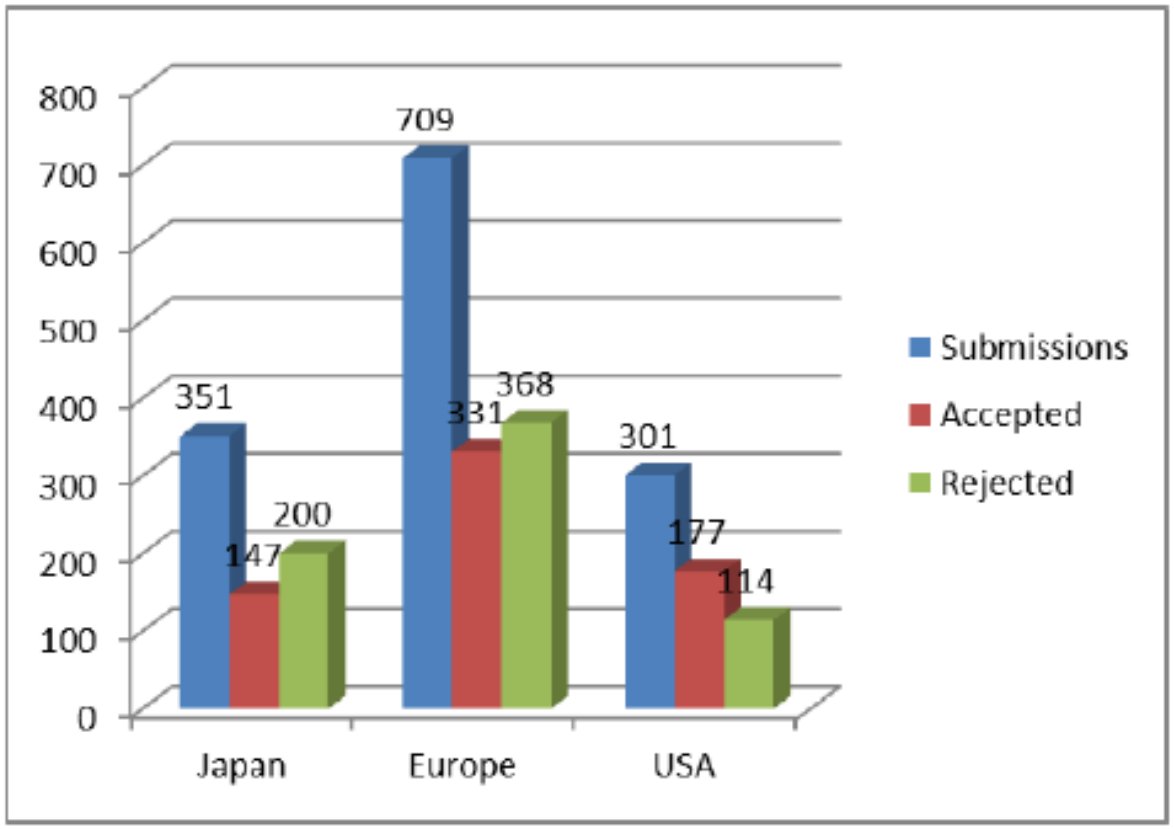
- 1801 papers submitted from 53 Countries,
  806 accepted, to be presented in 11 Parallel sessions
- 60 Video Contributions submitted, 39 selected
- 13 Silver Jubilee Video Contributions, 11 selected
- 49 Workshop and Tutorial proposals, 33 selected

Paper Submissions by Country

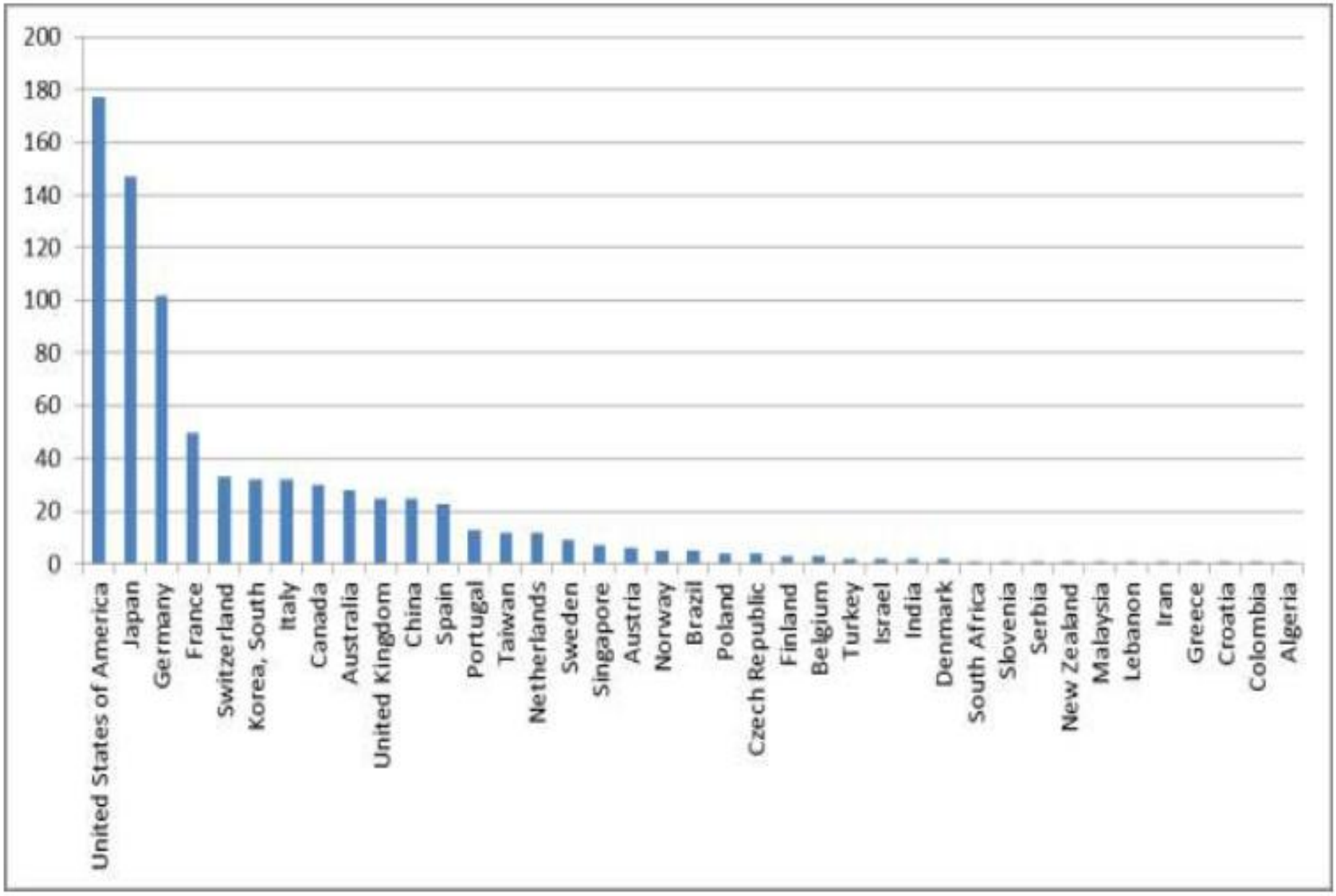


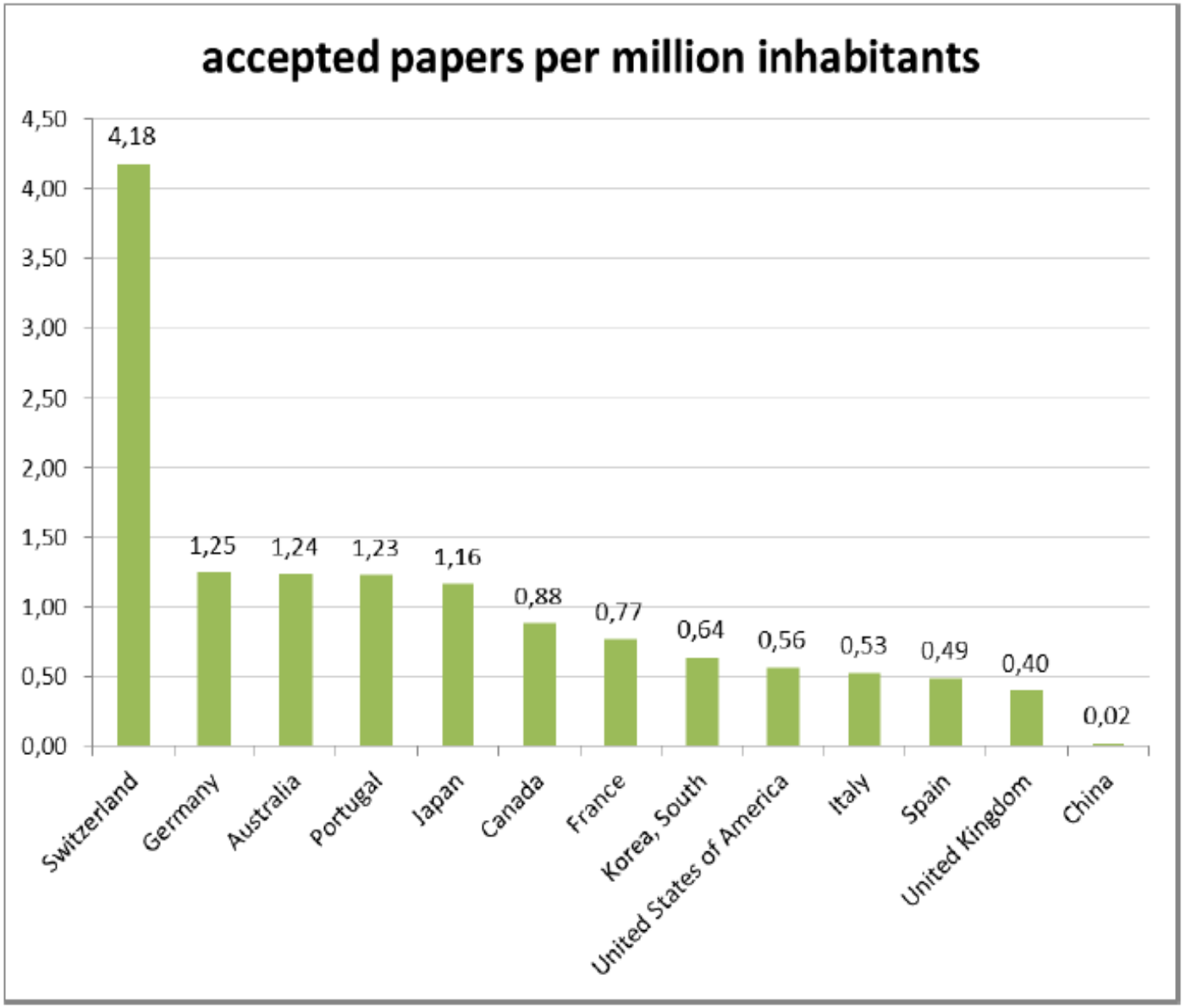
Accepted Papers by Region

75% of paper submissions



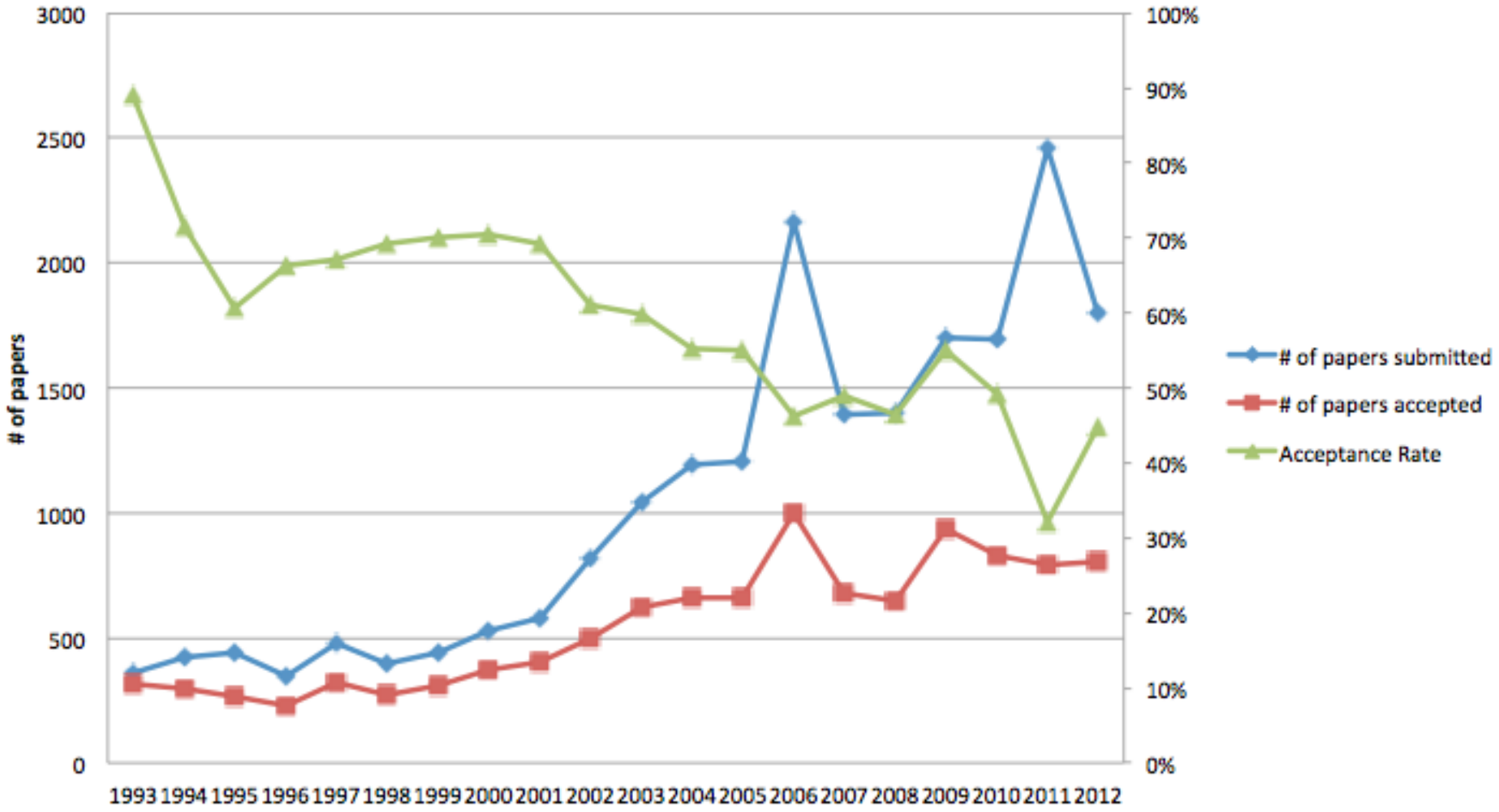
Papers Accepted by Country



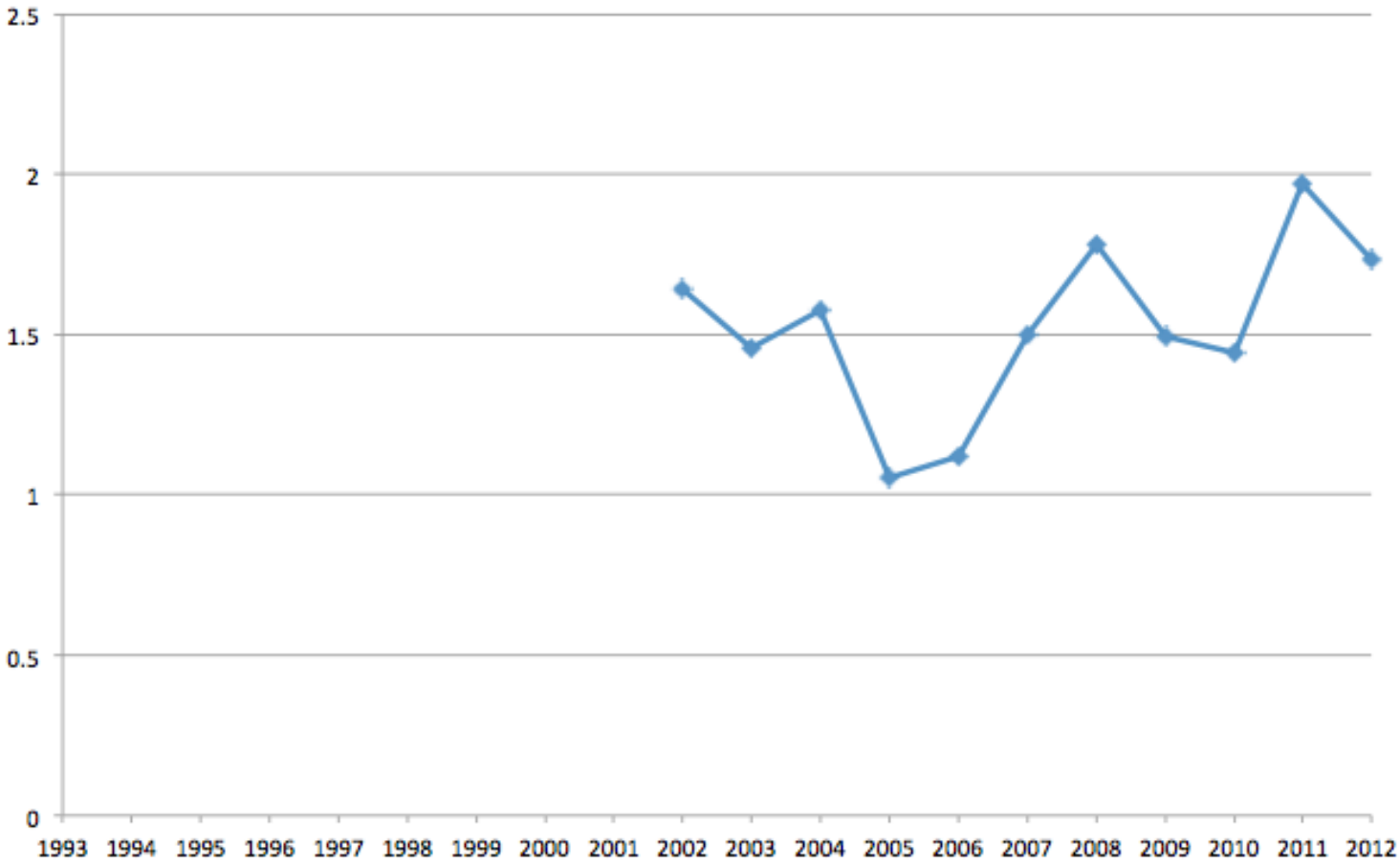

accepted papers per million inhabitants
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
4,18
1,25
1,24
1,23
1,16
0,88
0,77
0,64
0,56
0,53
0,49
0,40
0,02
Switzerland
Germany
Australia
Portugal
Japan
Canada
France
Korea, South
United States of America
Italy
Spain
United Kingdom
China

IROS 2012
October 7-12

Number of papers & acceptance rate of IROS



Attendees rate against accepted papers



IROS2012: > 1,400 (as of 7 Oct. 2012)

IROS 2012 October 7-12

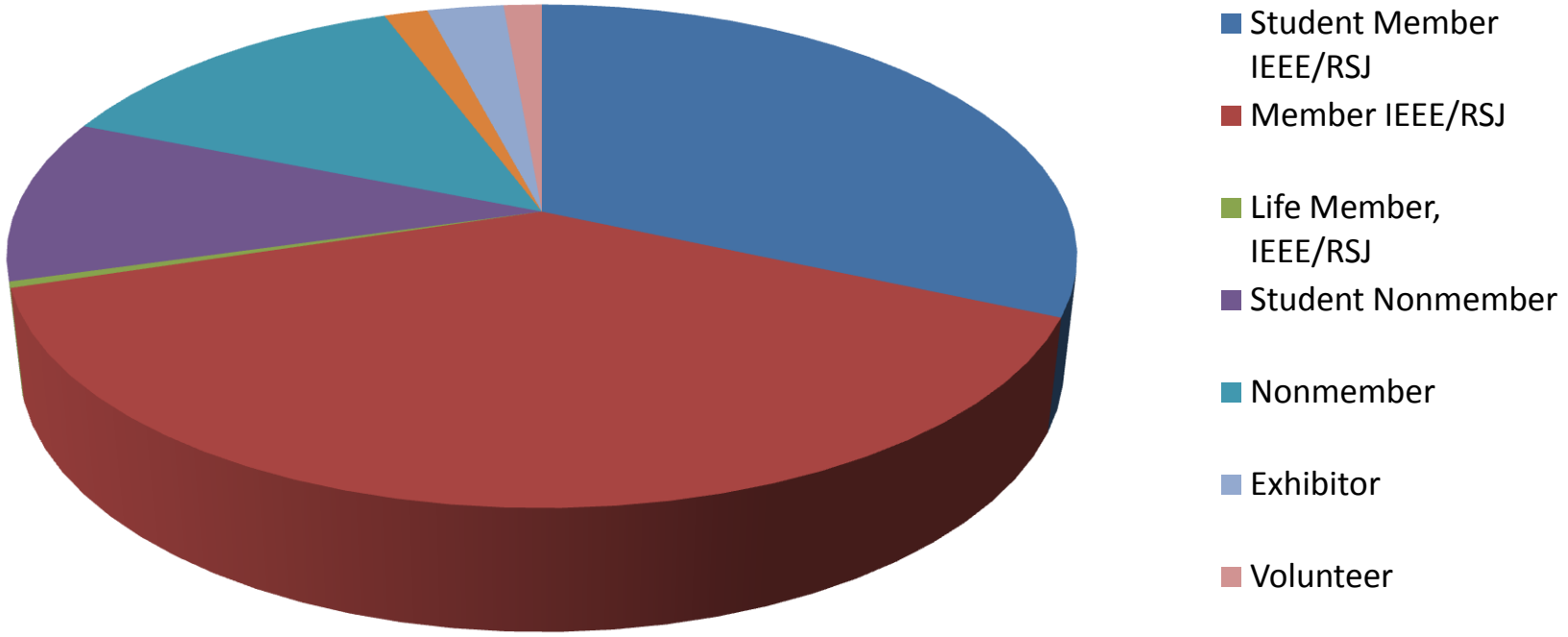
Participant Numbers!

- 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



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**

Industrial Forum

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

RoboCup @Work

COMPETITION & EXHIBITIONS

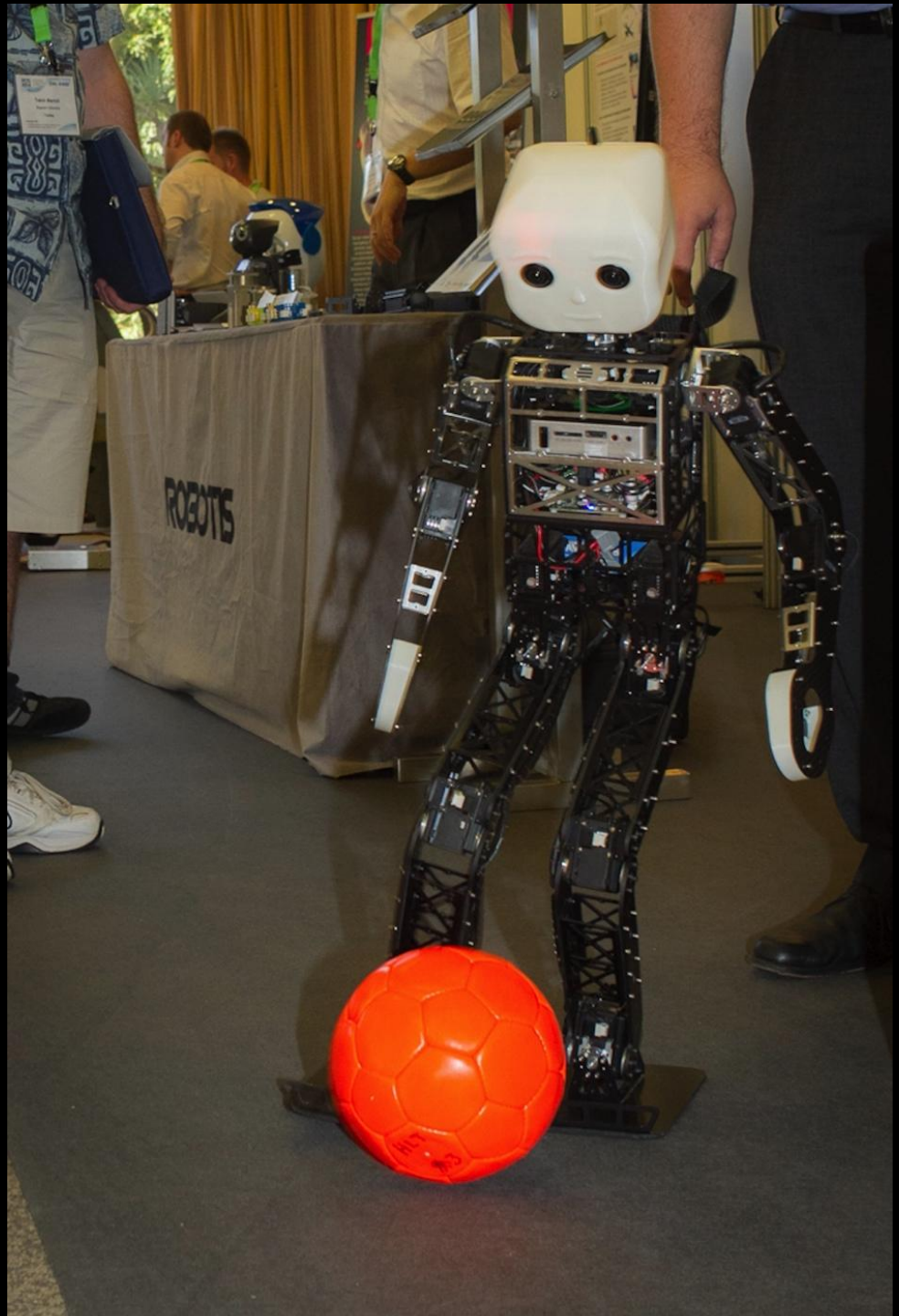
3 teams

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

19 participants

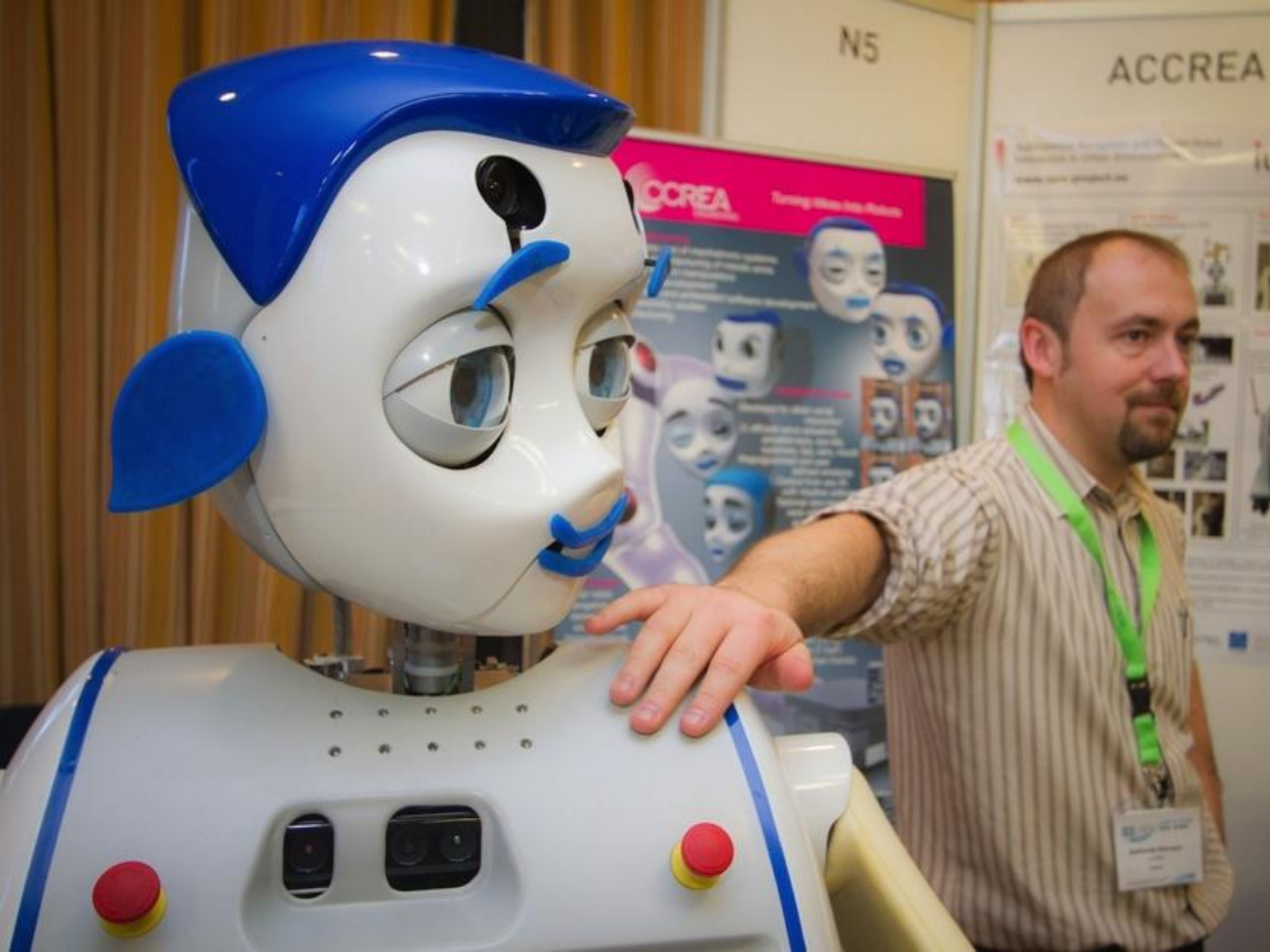
Goal: *push ahead robotics research through competitions and benchmarking using common challenges*

33 Exhibitors


ROBOTIS

BUILT FOR
EXTREME
RESEARCH
BUILT FOR
EXTREME
RESEARCH
I BUILD ROBOTS

PAL


N5
ACCREA

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**

25

25
2012

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Youth Outreach Event

- **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.

IROS 2012 October 7-12

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

ESPECIAL

IROS 2012
October 7-12

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

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UNIVERSIDADE DE COIMBRA

INSTITUTO DE SISTEMAS E ROBÓTICA

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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

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Organizing Committee

- **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 Committtee**
  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

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Gold Corporate Sponsors exhibiting:

adept mobilerobots

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Silver Corporate Sponsors exhibiting:

ALDEBARAN Robotics

NATIONAL INSTRUMENTS

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SCHUNK

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Robotics for Quality of Life and Sustainable Development

Thank you for Your Participation!

But… Enjoy the Farewell Lunch and the Remaining Workshops

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