Outline

• Mission and vision
• Facts and figures
• Research
  - Computer and Robot Vision (VisLab)
  - Dynamical Systems and Ocean Robotics (DSOR)
  - Evolutionary Systems and Biomedical Engineering (LASEEB)
  - Intelligent Robots and Systems group (IRSg)
  - Signal and Image Processing (SIPg)
• Advanced training
• Tech transfer
• Outreach
ISR-Lisbon is an RD&I institution, affiliated with Instituto Superior Técnico (IST) where advanced and multidisciplinary research activities are carried out, in the areas of Robotic Systems and Information Processing.

Research domains:
- Systems and Control Theory
- Robotics
- Signal Processing
- Computer Vision
- Optimization
- AI and Intelligent Systems
- Biomedical Engineering.

Three-fold activities:
- Research
- advanced Training and Outreach
- Science, Technology and Society
Facts and figures

Foundation: 1992

# Faculty: 33
# Post docs: 20
# PhD students: 65
# PhDs awarded (2013-17): 62

Evaluation (2015-17): Excellent

Funding (2013-17):
FCT: Institutional 3.5M€
Projects: 1.6M€
Grants: 2.8M€
International: 4.6M€
Other: 0.24M€
Total: 12.9M€
LARSyS Architecture

VISION

an excellence research center in the design of complex, socio-technical engineering systems

- cross-disciplinary research agendas
- societal challenges
- industry involvement

OCEAN | exploration
URBAN | sustainability
AIR | space
LIFE | engineering
INTERACTION | cognitive

Socio-Technical Systems
Systems, data science & learning

TÉCNICO LISBOA
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• Conclusions
Computer and Robot Vision Lab (VisLab)

Research Areas
- Image Analysis & Surveillance
- Visual Navigation & Calibration
- Bioinspired Vision and Learning
- Cognitive Robots

- 8 Phds (4 Faculty + 4 PostDocs)
- 16 PhD students
- 18 PhDs awarded (2013/2019)
- Hosts of the iCub
Dynamical Systems and Ocean Robotics group (DSORG)

Research Areas
- Dynamical systems theory
- Networked estimation and control,
- Geophysical navigation,
- Cooperative aerial & marine robots

Areas of intervention:
• Technologies for ocean exploration including networked air and marine robots
• Robotic systems for the inspection of critical marine infrastructures

13 PhDs (4 Faculty + 9 PostDocs) 14 PhD students
Evolutionary Systems and Biomedical Engineering (LASEEB)

Research areas:
1. Neuroengineering (sleep, emotions, neurofeedback)
2. Neuroimaging (EEG, fMRI, brain dynamics and networks)
3. Biological and medical imaging
4. Biologic inspired optimization and complex systems simulation

- 4 Faculty
- 2 Postdocs
- 14 PhD students
- 4 Active Projects
Intelligent Robots and Systems group (IRSg)

Research Framework:

Holistic view of complex systems control and coordination, following approaches that fuse Systems, Control, and Decision Theories with Artificial Intelligence.

Since 2002:

- 19 PhDs finished
- Currently 11 PhD students
- 6 faculty (IST) and 2 Post-Doctoral Fellows
- ~3 M€ in R&D projects (FCT, AdI, EU, ESA) through competitive funding
- 4 Books, 112 journal papers and 312 conference papers
Signal and Image Processing Group (SIPg)

Research Areas
- Large Scale/Nonlinear/Distributed Signal Processing
- Image/video recognition, 3D reconstruction
- Ocean acoustics

- 20 PhDs (19 Faculty+1 Researcher FCT)
- 22 PhD students
- 23 PhDs awarded (2005-2015)
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Advanced training/infrastructures

Premium partnerships
- CMU – Portugal: Dual PhD Program
- IST-EPFL Joint Doctoral Initiative

FCT Doctoral Programs
- RBCog: Robotics, Brain and Cognition
- NetSys: Networked Interactive Cyber Physical Systems

National Roadmap of Research infrastructures
- Robotics, Brain and Cognition Lab
- Brain Imaging Network (BIN)
- European Multidisciplinary Seafloor Observatory

Advanced research infrastructure in many areas
- Robotics (underwater, aerial, indoors, outdoors, humanoids)
- Test-bed for benchmarking in EU robotic competitions
Nurturing innovation: spin-off companies

- observit
- mind
- reverse levels
- Blue Edge
- ALBATROZ ENGENHARIA
- selfTech
- boomApp
- µROBOPTICS
Outreach

S&T EDUCATION THROUGH ROBOTICS TO STUDENTS
• More than 300 students from more than 40 high schools in Summer activities since 2000
• Educational partnerships with schools
• Frequent visits from school groups of all ages

PARTICIPATION & CO-ORGANIZATION OF EVENTS
• RoboCup 2004 (1500 participants)
• European Researchers Night and Encontro Ciência 2018
• Portuguese Robotics Open
  • Robótica 2011 (700 participants)