

# LIPADE

## AN OVERVIEW

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THEMIS PALPANAS, FLORENCE CLOPPET

# LIPADE in few words

- Research unit created in 2009
  - For representing the new computer science laboratory in Paris Descartes University (PDU)
  - Previously named CRIP5 founded in 1998
- Belongs to the Faculty (UFR) of Mathematics and Computer Science
- Located at the Centre Universitaire des Saints-Pères (CUSP)
  - Multidisciplinary research center
  - In the center of Paris



# ACADEMICS

- Master Degree
- Academic Collaborations
- Doctoral School



# Master Degree

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- Master in Computer Science
  - Vision and Machine Intelligence
  - Distributed Artificial Intelligence
  - Networks and Autonomous Systems
  - Data, Knowledge and Intelligence
  
- Master in Business Informatics
  
- Master in Biomedical Engineering

# Academic collaborations

## ➤ Erasmus

- University of Genova (Italy)
- University of Modena (Italy)
- University of Crete (Greece)
- Middle East Technical University (Ankara, Turkey)

## ➤ Joint Master Degree

- Computer Vision & Image Processing Track
- Master TICV (ENIT- Tunis)



# Doctoral School

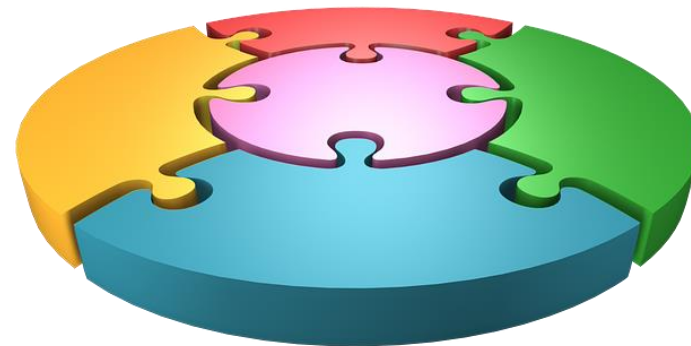
- Member of the EDITE doctoral school
  - **ED 130** Informatique, Télécommunications et Electronique



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# Research

- Research Groups
- Collaborations
- Technology Space

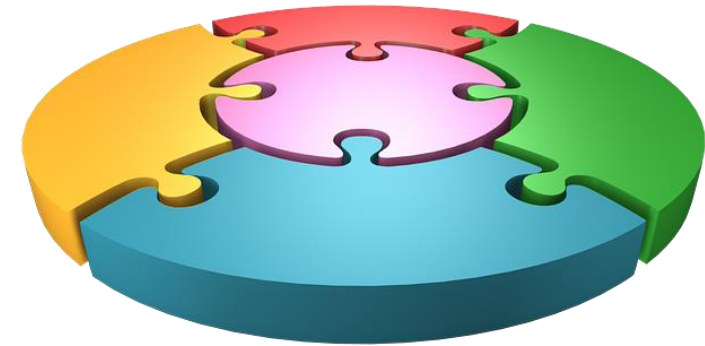


# Research Groups

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## ➤ **Four** main **complementary** research domains in computer science

- Artificial intelligence / Multi-Agent systems
- Data and Knowledge Management
- Security and Communications
- Computer Vision





# Security and Optimization of Communication Systems Group

SOCS Group



## Research Directions

- Wireless & Mobile Networking
- Resource & Performance Optimization
- Network Security & Anomaly Detection

## Application Areas

- Body Area Sensor Networks
- Healthcare Monitoring
- Internet of Things
- Audio & Video Quality

# Data Intensive and Knowledge Oriented Systems Group



## Research Directions

- Data Quality
- Data Management
- Data Privacy
- Data Series and Streaming Data
- Data Analytics

## Application Areas

- Operational Health Monitoring
- Life Imaging
- Healthcare Data Management
- Gravitational Wave Astronomy
- Social Immigration Behavior
- Service Computing
- Finance prediction



## Research Directions

- Autonomous Agents and Multi-Agent Systems
- Computational Argumentation
- Automated Negotiation
- Automated Decision Making
- Multi-Agent Planning
- Agent Oriented Software Engineering
- Incomplete Information Games

## Application Areas

- Law and Judicial Reasoning
- Medical Diagnosis
- Ambient Intelligence
- Artificial Markets
- Computer Vision
- Access Management to Private Data



## Research Directions

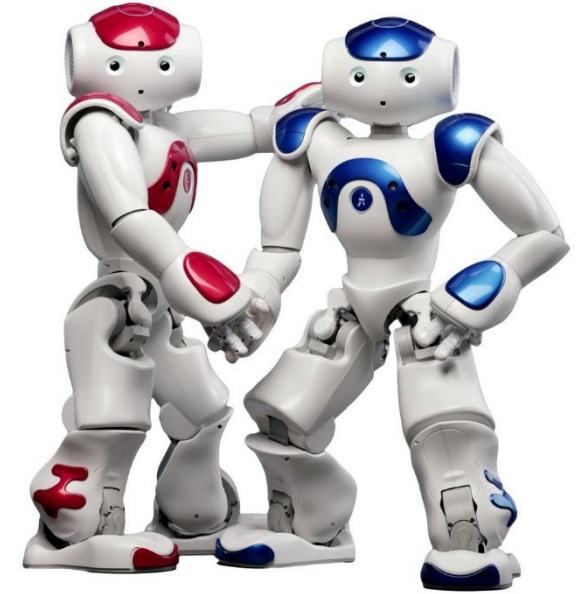
- Image Analysis and description
- Recognition model
- Knowledge Integration

## Application Areas

- Biomedical imaging
- Document image
- Remote sensing imaging

# Technology Space

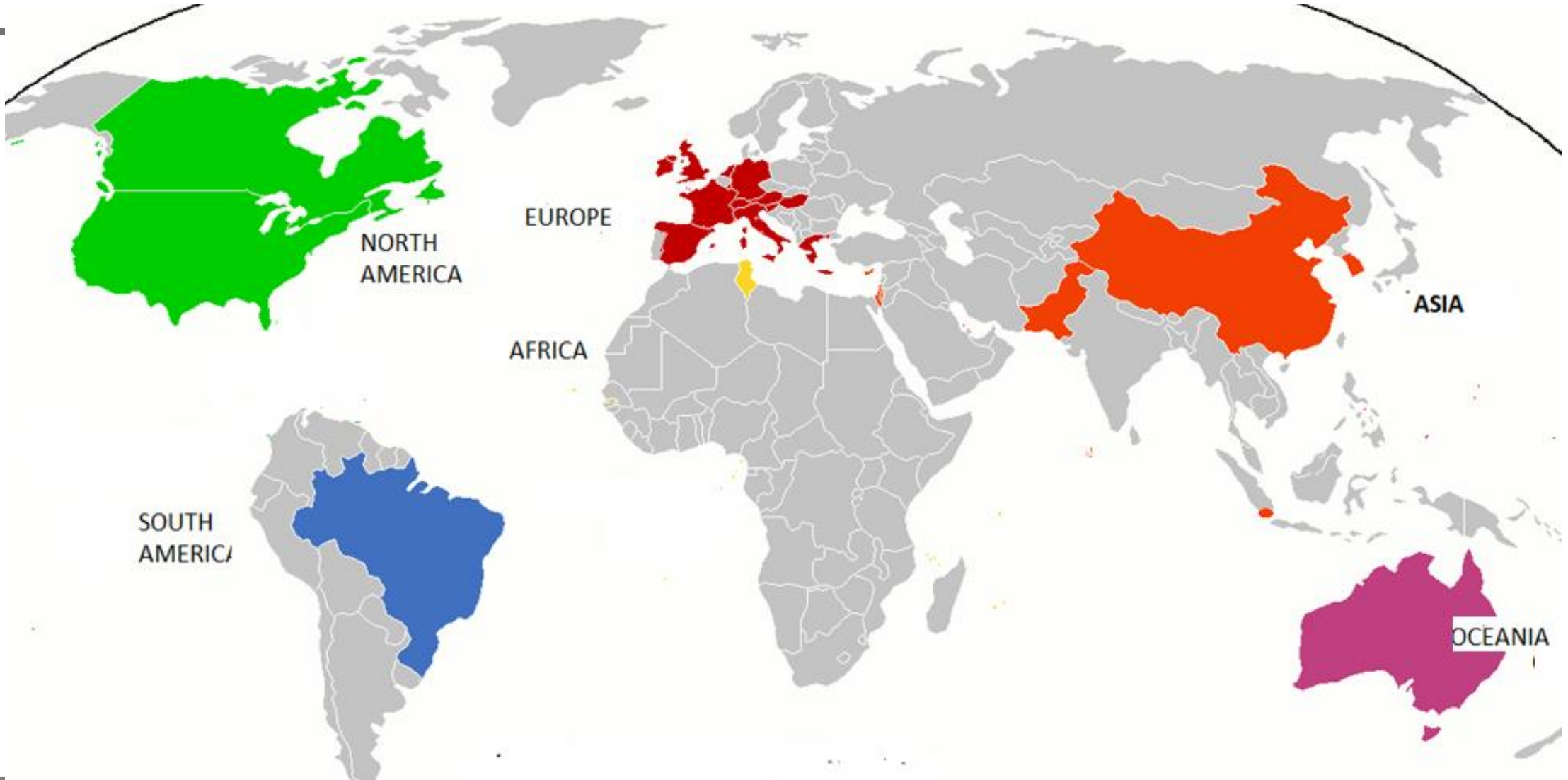
- Simulate ambient intelligence applications related to real world environments
  - such as train stations, airports, market stores, ...
- Equipped with
  - 5 robots : 2 Nao, 3 mobile TurtleBot-2 with programmable arms
  - 1 server and 3 computers of high computational capacity
  - several sensors and cameras



**Turtlebot 2**



# Collaborations



# National Collaborations

**Multiple collaborations with researchers working on topics aligned with the research directions of LIPADE**

➤ **National University Laboratories**

- LAMSADE, LIP6, LRI, LABRI, IRIT, LIRMM, L3i, LIRIS, LORIA, ICUBE, CRESTIC, APC, LIX

➤ **Research Centers**

- INRIA (Paris, Sophia Antipolis)
- Institut Pasteur (Paris)
- Brain and Spine Institute – ICM (Paris)
- Commissariat à l’Energie Atomique – CEA (Paris)
- IGN (Paris)

➤ **Industry**

- EDF (Paris); Airbus (Toulouse); Safran (Paris); Orange Labs (Paris); Nokia Bell Labs (Paris), Huawei Labs (Paris)



# International Collaborations

**Several (occasional and permanent) collaborations with researchers from**

➤ **Universities around the world**

- Imperial College (UK)
- University of Toronto (Canada)
- Harvard University (USA)
- University of California at Riverside (USA)
- Stanford University (USA)
- Carnegie Mellon University (USA)

...

➤ **Public and private international research centers**

- Artificial Intelligence Research Institute (Spain)
- Huawei Research (Germany)
- IBM Research (USA, Switzerland, Ireland)
- National Institute of Health (USA)

➤ **Leading industrial players**

- Facebook (USA)
- Microsoft (USA)
- Lufthansa (Germany).



# Awards, Best Papers, Patents, Software

## ➤ Awards and Distinctions

- 1 IUF (senior)
- Chevalier dans l'ordre des Palmes Académiques
- IBM Shared University Research
- AI Mashup Challenge (3rd prize)
- Simon Régnier Prize (2017)
- 7 Best Papers (in last 10 years)

## ➤ Competitions

- Winner of the 1st International Competition on Computational Models of Argumentation (ICCMA 2015).
- Winner of the Syllogism Challenge 2017 (organized by U. of Freiburg)
- Winner of GR Track of the 2nd International Competition on Computational Models of Argumentation (ICCMA 2017)

## ➤ Patents: 4

## ➤ Software / prototypes: 23

# Student Awards

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- **Paul Caseau** PhD Prize (Institut de France and Academy of Sciences)
  - recognizing the contributions of a PhD in the fields of computer science and energy
- 2 x **BDA** PhD Prize
  - recognizing the best PhD thesis in the fields of databases and data analytics
- **INFORSID** PhD Prize
  - recognizing the best PhD thesis in the fields of information systems and computer science
- **IMDR “Recherche et Industrie”** Prize
  - recognizing the contribution of young researchers

# Graduate School on Artificial Intelligence and Data Science (grAlds)

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- organise all educational efforts related to fields of:
  - artificial intelligence
  - machine learning
  - statistical learning
  - data analytics
  - data science
  - data intelligence

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  - data analytics
  - data science
  - data intelligence
  
- grAlds aims to:
  1. increase awareness of relevant Master's programs
  2. better connect these Master's programs with the corresponding research work
  3. provide more opportunities for interdisciplinary educational offerings and research initiatives



# Data Intelligence Institute of Paris (diiP)

- Université Paris Cité IdEx inter-disciplinary institute
  - promote **inter-disciplinary research on data-intensive problems**
  - involves computer science, mathematics, physics, chemistry, life sciences, material sciences, earth sciences, sciences of the universe, social sciences



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- bring together world-class experts conducting cutting-edge research on
  - several **data intensive disciplines**
  - foundational **data analytics/intelligence disciplines**
- **educate new generation of researchers**
  - knowledgeable about data science/intelligence
  - informed about and open to work with other disciplines
  - adapted to the market needs for research and technical skills





**Looking forward to  
working with you!**

