RESEARCH LABORATORIES

LABORATORY 1. ***SENSES (SEnsors NetworkS and Embedded Systems Laboratory)***
Lab Director: Prof. Chiara Petrioli
Lab Members: Prof. Gaia Maselli, Dr. Dora Spenza, Dr. Roberto Petroccia, Dr. Loreto Pescosolido, Dr. Valerio Di Valerio, Dr. Angelo Capossele, Daniele Spaccini, Alessandro Cammarano, Alessandro Camillo', Ariona Shashaj, Luigi Picari, Petrika Gjanci

Lab Activities: SENSES is a laboratory of the Computer Science Department at University of Rome "La Sapienza", directed by Prof. Chiara Petrioli. Our current research activities include the design, implementation and evaluation of low power sensing systems and cyber physical systems; the design of novel communication paradigms for IoT and sensing systems equipped with multi-source energy harvesting and wake up radios; the design and real-life evaluation of protocol stacks for underwater sensor networks; the design and implementation of RFID systems and of systems based on passive backscattering; the design and evaluation of E-health and assisted living systems; the design of solutions exploiting advanced phy layer paradigms such as cognitive networking; the design of solutions for green, battery-less mobile networking; the design and evaluation of security solutions for energy-harvesting wireless sensor networks; the design of WSN-based solutions for structural health monitoring and archeological site/historical buildings monitoring. The lab is one of the core components of the new Center for Cyber Intelligence and Information Security and of Sapienza Innovazione ICT technology for security inter-department lab. Sapienza Innovazione is 'La Sapienza' technology incubator, funded by the italian ministry of industry.

The lab has collaborations with the following institutions: MIT AUV lab, UCLA, UMASS Amherst, Penn State University, Northeastern University, Sandia National Labs, University of Central Florida, NATO STO CMRE, University of Padova, SINTEF, University of Pisa. The lab has collaborations with the following industries: Selex, Barco, Nexse, WSENSE, Thales, Kongsberg, Evologics, Graaltech, Solexperts, STMicroelectronics. The Lab has participated to over twenty research projects, coordinating two projects (EC FP7 GENESI and EC FP7 SUNRISE). Members of the lab has received several awards such as Google fellowship, IBM best thesis award, IEEE INFOCOM 2013 best student poster award.

Lab equipment includes high performance workstations; simulation licenses; terrestrial (indoor/outdoor) and underwater sensor networks testbeds.

Contact: petrioliATdi.uniroma1.it
Web page: http://senseslabDOTdiDOTuniroma1DOTit

LABORATORY 2. ***Computer Graphics (CGLab)***
Lab Director: Prof. Fabio Pellacini
Lab members: Claudio Calabrese;Francesco Di Renzo;Valentina Tibaldo;Christian Santoni; Gabriele Salvati

Lab activities: The main activities of the lab concern research on 3D Rendering, 3D Design, Computational Concerns in 3D Fabrication. Current research projects focus on Appearance Design, Collaborative Modeling, Appearance Fabrication. The lab has consolidated research collaborations with leading international research labs and academic institutions such as: Dreamworks Animation, Microsoft Research Asia, Dartmouth College.

Lab equipment: the lab is equipped with Apple Computers, SW suites, and several digital cameras.
Contact: pellaciniATdi.uniroma1.it
Web page: http://pellaciniDOTdiDOTuniroma1DOTit

LABORATORY 3. ***Linguistic Computing Laboratory (LCL Lab)***
Lab Directors: Prof. Roberto Navigli, Prof. Paola Velardi
Lab members: Daniele Vannella, Stefano Faralli, Giovanni Stilo, Tiziano Flati, Mohammad Taher Pilehvar, Andrea Moro, Moreno De Vincenzi, Marc Franco Salvador. David Jurgens, Luca Matteis, Maud Ehrmann

Lab activities: The group aims at devising and developing algorithms and methods in the context of machine learning, pattern matching and recognition and natural language processing to solve problems related to automatic text understanding, construction, learning and population of ontologies, semantic text indexing and classification, query expansion, question answering, etc.

Lab equipment: The lab is equipped with several high performance workstations, and has provided machines to the Cineca High Performance Computing (HPC) cluster. In return the lab can use for 700000 hours such HPC cluster.
Contact: navigliAtdi.uniroma1.it
Web page: http://lcl.uniroma1.it/

LABORATORY 4. ***Model Checking Laboratory (MCLab)***
Lab Director: Prof. Enrico Tronci
Lab Members: Prof. Annalisa Massini, Prof. Igor Melatti, Prof. Ivano Salvo, Prof. Toni Mancini, Prof. Federico Mari, Vadim Alimguzhin, Francesco Davì, Zahra Pooranian, Maria Markelova, Massimo Nazaria, Sigmundo Preissler.

Lab Activities: MCLab main research activity focuses on Model Checking based algorithms and tools for automatic system level formal verification (V&V) of mission or safety critical systems such as those found in: digital hardware, embedded systems, control systems, railway interlocking systems, on-board software (e.g., for automotive, avionics, etc), Medical Protocols, Systems Biology, Virtual Physiology, business processes, Decision Support Systems. MCLab is constantly involved in Industrial as well as International research projects. Recent projects include EC FP7 ULISSE, EC FP7 SmartHG, EC FP7 PAEON (the latter two coordinated by the lab and Prof. Tronci).
Lab equipment: 60 nodes GPU cluster, workstations.
Contact: tronciATdi.uniroma1.it
Web page: http://mclab.di.uniroma1.it/site/

LABORATORY 5. ***Pictorial Computing Laboratory (PCL)***
Lab Director: Prof. Paolo Bottoni, Prof. Luigi Cinque
Lab Members: Prof. Anna Labella; Prof. Maria De Marsico; Prof. Emanuele Panizzi; Fabrizio Borgia;Daniele Cipriani;Michele Geremia Ceriani
Lab activities:
The research of the Pictorial Computing Laboratory focuses on Human Computer Interaction (HCI) and computer vision. As for HCI, we consider both design and evaluation issues. The first relates to interaction design, and especially accessibility, multimodality, user-centered

and learner-centered design (the latter targeting e-learning applications). Evaluation focuses instead on usability evaluation, both general and related to specific application fields. The activities range from metamodels for interaction and visual languages and frameworks, to prototypes of interactive systems, used in fields such as multimodal/multimedia asynchronous communication in e-learning, collaborative work, annotation systems for web pages, and mobile applications. Regarding Computer Vision, we consider the use of of image processing in different application fields, such as medical imaging and biometric recognition.

The lab members have collaborations with international research institutions such as University of Meryland (USA), George Mason University (USA), Shizuoka University (Japan) and the Advanced Technologies Application Center(Cuba).

Lab equipment: workstations, scanners, digital cameras.
Contact: bottoniATdi.uniroma1.it
Web page: https://sites.google.com/a/di.uniroma1.it/pcl/

LABORATORY 6. *Computer Systems Lab*
Lab Director: Prof. Alessandro Mei
Lab members: Dr. Sokol Kosta, Dr. Julinda Stefa, Simone Bronzini, Enis Ulqinaku

Lab activities: The main activities of the lab concern research in Computer Systems and Distributed Systems. The Lab has developed a strong background in cloud computing, especially mobile cloud systems, social distributed systems, wireless systems, security and privacy. The resarch of the Lab is supported by Google, the EU, the Italian Government and Sapienza, and has been presented with several research awards like the Google Faculty Award 2013, the IEEE Infocom 2013 Best Demo Award and the IEEE Secon 2013 Best Demo Award.

Lab equipment: Several workstations, power meeters, mobile devices.
Contact: meiATdi.uniroma1.it
Web page: http://wwwusers.di.uniroma1.it/~mei/sitoweb/Home.html

HANDS ON DEVELOPMENT LABS FOR STUDENTS AND TECHNOLOGY TRANSFER

LABORATORY 1. *Sapienza Apps Lab (Sapienza Apps)*
Lab Director: Prof. Emanuele Panizzi
Lab members: Matteo Nati, Domenico Boiano
Lab activities: The lab focuses on HCI for mobile devices, the design and development of app with a particular emphasis on user interfaces, usability, and user experience.
All apps are designed based on the Agile User Centered Design process, with focus on usability and the user during the whole development cycle. The apps are mainly developed for the iOS (Apple) and Android (Google) platforms.
The topics covered range from transport to environment to cultural heritage to education to personal health to music, utilities, services for students etc. Apps are developed by master students and undergrad students under the supervision of the lab director. From 2010 the lab has hosted around 70 students doing their undergrad or master thesis, and over 50 students who just performed projects in the area. Best apps have been published on App Store, Google Play. In particular over 40 apps developed in the lab have been published in App Store/Google Play since 2011 (including RMob, iHours, iLog, Infostud, Basket Recorder, Virtual Control, iMontessori, Follow AR, SeismoCloud). The average number of download of the apps is in the ten thousand.

In the lab it ha salso been developed the iOS (iPhone and iPad) infostud app which is used by "La Sapienza" to register students to exams and to plan and follow their career.
Contact: panizziATdi.uniroma1.it
Web page: www.sapienzaapps.it

LABORATORY 2. *Gamification Lab*
Lab Director: Prof. Paola Velardi
Lab members: Prof. Luigi Cinque, Prof.ssa Maria De Marsico, Prof. Roberto Navigli, Prof. Emanuele Panizzi, Prof. Fabio Pellacini, Prof. Francesco Lutrario
Lab activities:
Gamification Lab is a university laboratory founded in 2013, dedicated to research and teaching in the field of gamification, gaming and digital simulations. The objective is designing, developing and testing gamification solutions, videogame products, simulations and highly interactive applications. Students participating in the Gamification workshops are involved in the development of projects under the supervision of qualified teachers and tutors. Working groups deal with all aspects of the project, from conception-design (game design), to experimentation, testing, prototyping and development, deployment and market analysis.
The laboratory aims to introduce innovative forms of teaching (on the job), as well as research and development projects promoting interdisciplinary cooperation between departments, researchers and students with companies, public bodies and financial operators.
The Gamification Lab is a collaborative effort between the Department of Computer Science and DigiLab (an Inter-departmental organization created on the initiative of twelve departments of humanities, the college of ICT and communications). In this context, the Gamification Lab operates as a section of the Laboratory of Information Technology applied to cultural resources, and as a structure used for innovative educational activities of the Master of Science in Computer Science. The Laboratory has obtained fundings by Fondazione Roma. In 2014 the course project carried out by the students of the laboratory http://gamificationlab.uniroma1.it/laboratorio/progetto-gamificationlab-2014 was selected for participation in the Maker Fair of Rome http://gamificationlab.uniroma1.it/archivionotizie/il-prototipo-del-gioco-differenziati-selezionato-alla-maker-faire
Lab equipment: 12 PC, autodesk eductaional suite. Kinect
Contact: velardiATdi.uniroma1.it
Web page: http://gamificationlab.uniroma1.it/

LABORATORY 3. *RFID Lab*
Lab Director: Prof. Alessandro Mei
Lab members: Paolo Di Rollo, Massimo La Morgia, Daniele Mattiacci

Lab activities: The activity of the RFID Lab is technology transfer in the area of systems, mobile applications, payment systems, distributed wireless systems, security, and privacy. The Lab has a long record of collaborations at national level with companies---in this context the Lab provides consultancy and perform research and development activities in highly innovative domains. The Lab is funded by the EU, the Regione Lazio, and the Italian Government.

Lab equipment: Several mobile devices, workstations, wireless tags and other wireless secure systems.

Contact: meiATdi.uniroma1.it
Web page: http://rfidlabDOTdiDOTuniroma1DOTit