



PhD in Information Technology and Electrical Engineering

Università degli Studi di Napoli Federico II

PhD Student: Dario Di Mauro

XXX Cycle

Training and Research Activities Report – First Year

Tutor: Francesco Cutugno



UNIVERSITÀ DEGLI STUDI DI NAPOLI
FEDERICO II

1. Information

Dario Di Mauro obtained a master degree in Computer Science in July 2013 at University of Naples “Federico II”. He is currently a PhD student, XXX cycle in the same University, with a fellowship founded by Fondo Sociale Europeo, P.O. Campania 2007/2013-2014/2020. His tutor is **Francesco Cutugno**.

2. Study and Training activities

His studies are oriented to Human-Computer Interaction and communication in a network of intelligent agents. In the first year, he attended the following courses:

- Three core issues for the Internet: things, security and economics
- Interazione Uomo-Macchina, Francesco Cutugno
- Modelli, metodi e software per l’ottimizzazione, Antonio Sforza

In that courses, he obtained fundamentals about Human-Computer Interaction, communication in IoT and optimization in networks.

He attended the following seminars:

- Linked Open Data-enabled strategies for Top-N recommendations
- Efficient service distribution in next generation networks
- The iCub project: an open platform for research in robotics & artificial intelligence
- Social Signal Processing: understanding social interactions, through nonverbal behavior analysis
- Advances in Practical Multi-agent Systems
- Visitor dynamics in a Cultural Heritage scenario
- Play with Connectome Challenges and Opportunities from in-vivo imaging of brain function and structure
- La ricerca nel settore scientifico disciplinare della elettrotecnica negli ultimi decenni
- Fundamentals of molecular communications and communication theoretical foundations of nervous systems towards BIO-inspired nanonetworks and ICT-inspired neuro-treatment

3. Research activity

Dario Di Mauro aims at developing **a framework to support multiple levels of interaction**; the goal of the work is to define a new language of communication among humans and machine. The focus of the work is on the user, designing Natural User Interfaces – using voice, gestures, etc as natural channels of interaction – and putting humans in the center of communication.

He worked on ICT solutions for the Cultural Heritage fruition in the Or.C.He.S.T.R.A. project, recurring to 3D sounds as a new interaction channel, developing Caruso, an interactive audio-guide. He collaborated in the develop of a gesture-driven interaction in a virtual and immersive environment, applied in archeological information presentation. He collaborated with the Archeology Department of the University of Naples and experts about storytelling and art for contents of Caruso.

Developed modules, oriented to natural interaction, will be included as communication parts of the proposed framework.

4. Products

In his first year of PhD studies, Dario Di Mauro published:

- D. D’Auria, D. Di Mauro, D. M. Calandra, F. Cutugno, A 3D Audio Augmented Reality System for a Cultural Heritage Management and Fruition, Journal of Digital Information Management, 13(4), 203
- D. Di Mauro, A framework to support multiple levels of interaction, Doctoral Consortium in CHIItaly 2015, Rome
- Augmented Reality Without Barriers: Dematerializing Interfaces in Cultural Heritage Applications (Extended abstract for Artificial Intelligence for Cultural Heritage 2015)

- Augmented Reality Without Barriers: Dematerializing Interfaces in Cultural Heritage Applications - Book Chapter for Artificial Intelligence for Cultural Heritage 2015 (submitted)

In preparation:

- A contribution for Journal of Visual Languages and Computing

5. Conferences and Seminars

During his first year, he participated at the following conferences:

- Signal-Image Technology and Internet-based Systems (SITIS 2014), Marrakech, Morocco
 - Barile, Calandra, Caso, D'Auria, Di Mauro, Cutugno, Rossi. (2014, November). *ICT Solutions for the OR. C. HE. STRA Project: From Personalized Selection to Enhanced Fruition of Cultural Heritage Data.*
 - D'Auria, Di Mauro, Calandra, & Cutugno, (2014, November). Interactive Headphones for a Cloud 3D Audio Application
- Doctoral Consortium in CHIItaly 2015
 - Di Mauro, D. (2015, September) *A framework to support multiple levels of interaction.*