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Scientific Mission Report

This document reports the activities carried out in the context of my visit to Carnegie Mellon University - Silicon Valley.

The exchange of ideas between scientific research groups from the different countries helps in the concept and in the development of new research subjects. The main objective of this visit was to contact with a new research group of Carnegie Mellon University that works in an area similar to the one in which I have been developing my research.

This was a very important visit as I discussed the state-of-the-art, to analyse and to refine the actual work and my projects. It was also very important to be acquainted with other testbeds, platforms and new approaches.

During my visit we proposed and explored new joint models for Internet of Things, integrating Wireless Sensor Networks with Human in the Loop systems. We explored new research opportunities. In particular:

- 1) I met faculty members and the director of CMU Silicon Valley.
- 2) I participated in Pei Zhang's research group activities.
- 3) I worked with Pei Zhang in the organization of two international conferences:

3.1.) Mobiquitous 2015 - 12th International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services, in Coimbra (Portugal) on 9-11 December 2015. Pei Zhang (CMU) and I will be the general co-chairs of this conference. Mobiquitous is a series of conferences organized in cooperation with the Association for Computing Machinery – ACM and the followings ACM Special Interest Groups: SIGAPP, SIGBED. It is also co-sponsored by IEEE and IEEE Computer

Society. Areas addressed by the conference include systems, applications, social networks, middleware, networking, data management and services, all with special focus on mobility and ubiquitous computing. Information on the 2014 edition can be found at <http://mobiqitous.org/2014/show/home>.

3.2.) ExtremeCom2014 - Extreme Conference on Communication and Computing - The Galápagos Expedition, on 11-16 August 2014, Galápagos Islands, Ecuador. Following on from the success of ExtremeCom 2009 - The Midnight Sun Expedition in Laponia, Sweden, ExtremeCom 2010 - The Himalayan Expedition in Dharamsala, India, ExtremeCom 2011 - The Amazon Expedition in Manaus, Brazil, ExtremeCom 2012 - The Swiss Alps Winter Expedition in Zurich, Switzerland, and ExtremeCom 2013 - The Volcanic Expedition in the Eyjafjallajökull Volcano region in Iceland, The Extreme Conference on Communication and Computing (ExtremeCom) brings together researchers and practitioners in areas related to communications in rural, remote or other extreme environments, and computing in extreme operating conditions such as extreme temperatures and energy constraints, extreme quantities ("big data"), extremely large-scale systems, and extreme levels of threat and uncertainty, in order to gain experience and insight into the challenges that such environments pose for the network and the users. Pei Zhang (CMU) and I will be the TPC co-chairs of this conference. The proceedings will be published by ACM and details of the conference can be found in <http://extremecom.org>.

4) I attended some classes of MS in Electrical & Computer Engineering:

- Wireless Network Security by Patrick Tague
- Mobile and Pervasive Computing by Pei Zhang
- Java for Smartphone Development by Bob Singh

5) I participated in a meeting on 29th January and 31st January with Nokia team to discuss future research projects.

6) I participated in a meeting on 30th January with Renault team to discuss future research projects.

7) I visited Nissan Research Centre in 14th February 2014.

8) I attended two lectures, namely:

"My 40 year Journey from Mainframes to Smart Phones", by Dr. Dileep Bhandarkar in 27th February 2014.

"The Online Revolution: Education for Everyone", by Prof. Andrew Ng (Stanford University) in 9th April 2014.

9) During my visit, we have deepened the research work centered on the Human in the Loop model, which was the subject for the submission of a joint research paper "Human in the Loop: state-of-the-art analysis" to IEEE Tutorials and Surveys.

10) We have worked on the development of new algorithms and protocols suitable to Internet of Things, and we are working on a new research paper: "Human in the Loop over Networks" to be submitted to ACM Sensys.

11) We started working on an international project proposal with European and America institutions to be submitted to H2020 and NSF.

The main benefit of this visit was the contact with an excellent research center that, necessarily, has a different view on possible approaches to the research objectives.

In addition, this scientific mission opened new communication channels between the two research groups and will constitute a first step for the identification of common research interests, potentially enabling the strengthening of co-operation.

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