Robot Revolution International Symposium

Toward the Realization of Robot Revolution

Prospect new tide of manufacturing of IoT age by sharing promoting policies and advanced practical examples in Europe and the United States

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Session 4 : 15:45-17:55

Robot, Society and Rule, Preparation for robot installation into society

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Title: **TESTING ROBOTIC APPLICATIONS IN REAL-LIFE SCENARIOS**

ABSTRACT

In my presentation, I will address some key issues necessary to provide an answer to the fundamental question on how robots can be deployed in real-life scenarios. I will refer to a solid experience acquired in Europe in a number of concrete cases.

The first set of issues that I will consider relates to the technical challenges and opportunities that researchers and industry are facing in new robots: deep changes *inside* the robot, mostly due to the revolution of MEMS (Micro Electro-Mechanical Systems) technology; the changes in the materials, design and energy requirements of the robot *body*; and the drastic variations of the world *outside* the robot, mostly

determined by the web and the cloud. Robots are definitely among the most important and useful Things of the Internet of Things (IoT).

The second set of issues that I will illustrate is about regulations. In fact, the testing of robots in real-life scenarios, in particular in the cities and on the roads, encounters numerous problems and requires extensive efforts that substantially delay research activity and hampers the creation of the new robot market. This depends on such factors as: the lack of a clear regulatory framework, the role of political powers in deciding whether to allow the testing, the existence of rules that were not conceived with robotics technologies in mind. Recent and unique experience developed in Europe in the framework of the RoboLaw Project has generated substantial new knowledge and expertise on how to address legal and insurance aspects of the robot deployment in real scenarios.

Finally, I will briefly illustrate and discuss the extensive experience that has been acquired in Europe in research and innovation projects on the deployment and application of real robots in real environments, and the results obtained in such extensive experiment campaign. In particular, I will present the experience of the "Robot-Era" EU Project, in which a unique range of experimental results have been obtained by testing various types of service robotics in real situations and settings, by involving more than 200 hundred real users in different European countries. Results will be illustrated on the most important factors required for accomplishing a real robot revolution, such as the acceptability, usability, performance and dependability of robots in such real-life scenarios.

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