

Distinguished Lecture Series 2008

Endoluminal Surgery, Endoscopic Microcapsules and Beyond

by

Professor Paolo Dario

Professor of Biomedical Robotics

Scuola Superiore Sant'Anna, Pisa (Italy)



Date: 24 October 2008, Friday

Time: 3:00 p.m. – 4:30 p.m.

Venue: Room 222, 2/F, Ho Sin Hang Engineering Building, CUHK

Abstracts

According to the trend of robotic surgery, the current generation of operating robots will be replaced by a second generation designed for minimally invasive and endoluminal access surgery. The need for this kind of surgery is motivated by the progress of diagnostic techniques, which allow to discover pathologies at a very early stage and to treat them when they are limited to a small area of the human body or even to a few cells.

In this scenario, new self-propelled robots for the investigation of hollow organs of the human body, robotic mini-capsules to be swallowed naturally by the patients and teleoperated from outside, programmable re-configurable modular micro-robots able to perform specific bimanual operations inside the human body, are among the most attractive and plausible solutions.

Also robotic solutions for foetal surgery represent a grand challenge for medicine because they have the potential to avoid the development of neonatal pathologies, with a major impact on the quality of life of patients and on the cost reduction for healthcare systems. Finally, nanorobotics represents the ultimate technology for future surgery, allowing to kill specific pathological cells or to treat them with very targeted therapy (up to gene therapy).

In this presentation, the author will describe different biorobotic approaches and solutions to this class of problems, and their vary attractive research, clinical and industrial opportunities.

Biography of the Speaker

Paolo Dario is currently a Professor of Biomedical Robotics at the Scuola Superiore Sant'Anna in Pisa. He has been and is Visiting Professor in many universities worldwide. He founded and coordinates the ARTS (Advanced Robotics Technologies and Systems) Laboratory and the CRIM (Center for Research In Microengineering) Laboratory of the Scuola Superiore Sant'Anna. His main current research interest is biorobotics, and in particular he is active on enabling micro, nano and ultra-precision technologies, and on the theory, design and development of different components (mechanisms, sensors, actuators, energy sources, interfaces, Microsystems) and of a variety of biomechatronic artefacts, including biomimetic and medical robots. Professor Dario is the coordinator of many national and European projects in the above fields, the editor of two books on the subject of robotics, and the author of more than 200 scientific papers (more than 160 on ISI journals) . He is Editor-in-Chief, Associate Editor and member of the Editorial Board of many international journals.

He has served in many national and international committees and boards for the evaluation of research programs and projects by funding agencies, universities and industries. He has also promoted the creation of many university start-up companies.

Prof. Dario has served as President of the IEEE Robotics and Automation Society in the years 2002-2003. Prof. Dario is an IEEE Fellow, a Fellow of the European Society on Medical and Biological Engineering, and a recipient of many honors and awards, including the Joseph Engelberger Award as a Pioneer in Research on Biomedical Robotics.

**** ALL ARE WELCOME **** For ENQUIRIES: Tel: 3163 4351/ 2609 8486

* Light refreshment will be served after the lecture *