Call for abstracts for IROS Workshop on Cognitive Surgical Robotics: From Virtual Fixtures to Advanced Cooperative Control
November 7th, 2013, Tokyo Big Sight, Japan, in conjunction with the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2013)

Web: http://ubimon.doc.ic.ac.uk/IROS2013/

Current advances in medical robotics research have enabled the performance of complex procedures through the development of surgical platforms with enhanced dexterity. However, the complexity of these systems increases the cognitive burden on the operator, especially when a large number of degrees-of-freedom have to be controlled simultaneously by the surgeon. For seamlessly interfacing the robotic system with the human, is therefore fundamental to improve the ergonomics and reduce the control dimensionality by automating the performance of simple tasks and integrating intelligent features in novel surgical robots.

To further improve the safety of robotically assisted surgery, recent medical robotics research is also investigating novel approaches to provide cooperative control between the surgeon and the robot. In this scenario, the robot can execute specific surgical tasks autonomously under the supervision of the surgeon. To this end, the robot must be able to sense changes in the dynamic surgical environment and adapt its actions accordingly, always keeping the human in the control loop. This is critical for overcoming the potential legal and ethical issues and promoting the wider uptake of robotic surgery.

The aim of this workshop is to bring together researchers from relevant disciplines to discuss novel techniques and promising results for the development of cognitive surgical robots and to establish the role of such systems in promoting the effective and safe integration of robotic technology in surgery.

Topics

The workshop will cover (but will not be limited to) the following topics:

- Virtual fixtures and dynamic active constraints

- Haptic, tactile and other perceptual feedback mechanisms

- Cooperative robotic control through perceptual docking

- Real-time surgical workflow monitoring and learning from demonstration

- Visual servoing and gaze contingent control

- Cognitive factors influencing human-robot interaction

- Augmented reality techniques for surgical navigation

- Image-constrained biomechanical modeling and prediction of tissue deformation

Instructions for Authors

Please submit your abstracts electronically to v.vitiello07@imperial.ac.uk no later than September 5, 2013
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Accepted papers will be presented as posters and 2-minute teasers.

Please download the MS Word template from the workshop website.

Completed papers should be submitted as a pdf-file.

Best poster/teaser will receive the workshop's Best Poster Award

Format: Abstracts (up to 2 pages including figures)

Due date: September 5, 2013

Submit to: v.vitiello07@imperial.ac.uk

Invited speakers

- Dr Pieter Abbeel, UC Berkeley, USA

- Dr Jumpei Arata, Kyushu University, Japan

- Prof Giancarlo Ferrigno, Politecnico di Milano, Italy

- Prof Paolo Fiorini, Universita' di Verona, Italy

- Anthony Jarc, Intuitive Surgical, USA

- Dr Yo Kobayashi, Waseda University, Japan

– Prof Sukhan Lee, Sungkyunkwan University, Korea

- Dr Joerg Raczkowsky, Karlsruhe Institute of Technology, Germany

- Dr Cameron Riviere, Carnegie Mellon University, USA

- Prof Guang-Zhong Yang, Imperial College London, UK

Important Dates

September 5, 2013: Deadline for abstract submission

September 25, 2013: Notification of acceptance for abstracts

October 5, 2013: Submission of camera ready abstracts

November 7, 2013: Workshop

Organizers

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