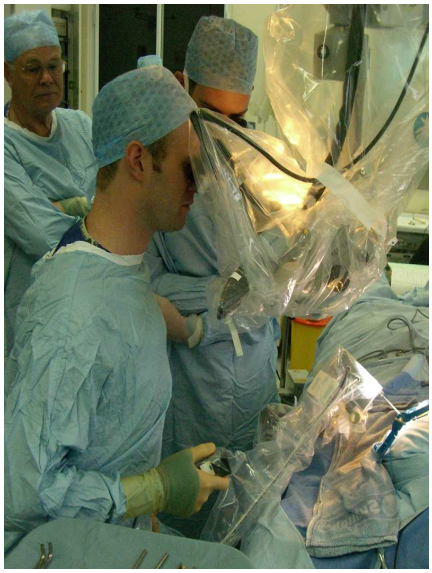
AeHRC, CSIRO & IEEE Queensland EMB Chapter
Invited Talk on **Robotic Surgery**

DATE: Friday, 4th March 2011
TIME: 10:00am - 11:30am
VENUE: University of Queensland Centre for Clinical Research
Building 71/918, Royal Brisbane & Women's Hospital Campus
Herston, QLD, 4029

Precise Surgery through the Control of Interaction between Robotic Tools and Flexible Tissue

By
Professor Peter Brett



Since the late 1980s, robotic surgery has made its mark as a precise means of tool deployment in surgical procedures. The majority of applications have focused on the control of tools on trajectories defined using pre-operative scan data. Pre-determined trajectories are appropriate where tissue movement between scanning and surgical therapy processes can be considered within acceptable limits. So far, in a few cases real-time sensory data has been used for guidance of robotic devices in surgery. By introducing the surgeon operator into the control loop, master-slave systems have accomplished greater complexity in the task. However perception of tactile interaction between the tool and tissue is difficult for the surgeon to detect. Changes in behaviour, changes in forces and stiffness can be useful signals to discriminate and to control interaction between the tool and tissue appropriately and precisely.

In this presentation the focus is on the next step in research to advance the development and deployment of surgical robots. In the future, the size, cost and a pragmatic approach will undoubtedly lead to wider adoption and application of the benefits of this technology in practice. Two such examples are described, one applied in practice. These demonstrate feasibility and indicate future research goals.

Professor Brett *is Director of the Brunel Institute for Bioengineering at Brunel University, London. His research interests are in smart sensing and robotic tools in surgical and other medical applications. A field that he has been investigating since 1988. He is immediate past Chairman of the Engineering in Medicine & Health Division of the Institution of Mechanical Engineers and Honorary Secretary and founder of the Technology in Medicine Section of the Royal Society of Medicine, London.*

Morning Tea Provided. RSVP to DR. AMOL WAGHOLIKAR by Wednesday 2nd March 2011 via email: Amol.Wagholikar@csiro.au

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