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Automatic
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Systems
Engineering

The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

“Anthropomorphism in surgical robotics and wearable technologies”

Dr Antonia Tzemanaki

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University of Bristol, UK*

Wednesday, 8 May 2019 at 14:00

LT2, The Diamond

Abstract

Over the past century, abdominal surgery has seen a rapid transition from open procedures to less invasive methods such as laparoscopy and robot-assisted minimally invasive surgery (R-A MIS), as they involve reduced blood loss, postoperative morbidity and length of hospital stay. Furthermore, R-A MIS has offered refined accuracy and more ergonomic instruments for surgeons, further minimising trauma to the patient. However, training surgeons in MIS procedures is becoming increasingly long and arduous, while commercially available robotic systems adopt a design similar to conventional laparoscopic instruments with limited novelty. Do these systems satisfy their users? What is the role and importance of haptics? Taking into account the input of end-users as well as examining the high intricacy and dexterity of the human hand can help to bridge the gap between R-A MIS and open surgery. By adopting designs inspired by the human hand, robotic tele-operated systems could become more accessible not only in the surgical domain but, beyond, in areas that benefit from user-centred design such as stroke rehabilitation, as well as in areas where safety issues prevent use of autonomous robots, such as assistive technologies and nuclear industry.

Biography

Antonia Tzemanaki is a Lecturer in Robotics at the Department of Mechanical Engineering at the University of Bristol and is part of the Bristol Robotics Laboratory. She obtained her PhD in Medical Robotics from the Bristol Robotics Laboratory and the Department of Engineering and Mathematics, UWE in 2016. Prior to that, she completed an MSc in Robotics from UWE, Bristol, UK and an MEng degree in Electrical and Computer Engineering from the Aristotle University of Thessaloniki, Greece. Her research focuses on hands and wearable technologies, especially with application on medical robotics. During her PhD, she developed the μ Angelo system for robot-assisted minimally invasive surgery, taking a bio-inspired, anthropomorphic approach to teleoperation, which is now being further developed as part of SMARTsurg project, funded by European Commission's Horizon 2020 programme.