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Automatic
Control and
Systems
Engineering

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

“Neuromechanics: Insects to In-vivo Mechatronics”

Dr Ravi Vaidyanathan

*Senior Lecturer in Bio-Mechatronics,
Imperial College London, UK*

Friday, 26 April 2019 at 14:00

LT2, Sir Henry Stephenson Building

Abstract

Mechatronics is the synergistic combination of precision engineering, electronic control, and systems thinking in the design of products and manufacturing processes. *Bio-Mechatronics* may be viewed as its extension fused with influence from biological systems; *i.e.* mechatronic systems designed based on inspiration from neural and physiological systems.

The talk will review methodologies for the enhancement of engineering (robotic) design based upon biological studies, with emphasis systems thinking in walking robots and human augmentation (cybernetics). Architectures founded upon biological inspiration will be summarized with specific examples from the speaker's work, including recent research that has been featured in *New Scientist*, *Flight Global*, and *The Engineer* magazines and on television specials produced by the BBC, Tokyo Broadcasting Systems, and the Discovery Channel and been showcased at 10 Downing Street and the US Pentagon. Applications highlighted will include medical and mobile robotic systems including insect-inspired mobile robots, cybernetic robot exoskeletons, brain-implant therapies and robot interface systems.

Biography

Ravi Vaidyanathan is a Senior Lecturer in Bio-Mechatronics at Imperial College London, UK. Dr. Vaidyanathan has led more than 20 separate research programs supported in USA, Singapore, and UK, authored over 100 refereed publications and is a named inventor four pending patents. His research has been recognized internationally awards from *SAGE Journals*, the *Institute of Electrical and Electronics Engineers (IEEE)*, *American Institute of Aeronautics and Astronautics (AIAA)*, and the *Robotics Society of Japan (RSJ)* including: "Best Paper" at the *IEEE International Conference on Intelligent Robots and Systems*, "Best Paper" in the *Journal of Systems and Control Engineering*, and being a finalist for the "New Technology Foundation Research Award on Entertainment Robots and Systems" awarded by the IEEE and the RSJ in recognition of the most innovative research in robotics over the 20 year period of 1987-2007. In 2016 his laboratory was awarded the UK "National Health Service (NHS) Innovation Award" as well as the *UK Institute of Engineering Technology (IET)* 'Most Promising Innovation in Robotics' award for their research in neurorobotics. Revolutionary aspects have also been featured by: the *BBC*, *New Scientist*, *The Engineer*, *Inc. Magazine*, *IEEE Institute*, *Flight Global Magazine*, *The Times of India*, *The Discovery Channel*, and the *Tokyo Broadcasting Company*. He has been invited to present his research at the US Pentagon, UK Parliament and, in June 2018, at the Prime Minister's residence at 10 Downing Street. Dr Vaidyanathan's laboratory has supported the formation of four spinout companies in biorobotics and mechatronics. He is currently co-chair of the *Institute of Electrical and Electronics Engineers Robotics and Automation Society Technical Advisory Committee on Biorobotics* and holds honorary professorships in the USA and India.