



THE CHINESE UNIVERSITY OF HONG KONG
Department of Electronic Engineering

SEMINAR

Utilising the vibro-impact self-propelled capsule for gastrointestinal endoscopies

By

Dr Yang Liu
University of Exeter

Date: 16 August, 2019 (Friday)

Time: 2:30 p.m.

Venue: Room 222 Ho Sin Hang Engineering Building

Abstract:

The vibro-impact capsule is a self-propelled mechanism capable of moving rectilinearly under internal excitation when overcoming environmental resistance. In this talk, Dr Liu will introduce his research work on the self-propelled capsule system for gastrointestinal endoscopies, including mathematical modelling, numerical analysis, control and optimization, experimental investigation, and proof-of-concept validation. His talk will focus on the dynamics of the capsule and how to conduct a fine tuning for its system and control parameters to obtain the best performance in terms of the progression rate and power efficiency. Finally, numerical and experimental investigation will be compared to demonstrate its capability of progression in the intestine.

Biography:

Dr Yang Liu is currently a Senior Lecturer in Engineering at the University of Exeter. He obtained his BEng in Automation from Hunan University, Changsha, China in 2003, MSc in Control Systems from the University of Sheffield, Sheffield, UK in 2005, and PhD in Control Engineering from Staffordshire University, Stafford, UK in 2010. After his PhD, he joined the Centre for Applied Dynamics Research at the University of Aberdeen, Aberdeen, UK as a postdoctoral Research Fellow. In 2013-2016, Dr Liu worked in the School of Engineering at Robert Gordon University as a Lecturer in Mechanical Engineering. He has been PI on the EPSRC First Grant (EP/P023983/1), the EPSRC Healthcare Technologies Discipline Hopping Grant (EP/R043698/1), and a Carnegie Trust Research Grant. He has published 60 academic papers including 37 high impact peer-reviewed journal papers (18 as the first author) and 2 patents. His current research interests include nonlinear dynamics and control, control of multistability, capsule robot, and experiment, with the main applications in gastrointestinal endoscopies.



ALL ARE WELCOME

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