

**DEPARTMENT OF MECHANICAL ENGINEERING****SEMINAR****Online**

Title: Optical Fibre Bragg Gratings (FBG) Shape Sensing Technology in Soft Robotic Modeling and Control

Speaker: Miss TIAN Libaihe (PhD candidate)
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Date: 3 May, 2022 (Tuesday)

Time: 11:00 a.m. (Hong Kong Time)

Zoom meeting: 1) Link to join the meeting:

<https://hku.zoom.us/j/95899445268?pwd=bHkvdGEvd2dnclEwb01laTd2R01wdz09>

2) Meeting ID: 958 9944 5268

3) Password: 983731

Abstract:

The soft continuum robot is considered as the most promising biomedical robot category, accredited to its intrinsic compliance property enabling safely interaction with its surroundings. Its remarkable high degree of flexibility places it in demand in various fields, particularly in minimally invasive surgical applications, where this continuum concept shares the same view as the robotisation of conventional endoscopy. Contrary to rigid robots with precisely analysed kinematics, it is difficult to estimate the poses and orientations of the soft robot through accurate modelling due to its infinite degrees of freedom, which poses a great challenge for the control of soft robots. This talk will overview a type of optic sensor on optical fibre, namely fibre Bragg gratings (FBG). The working principle exploits the diffraction of light and thus reflects variation in strain. Its compact size, high flexibility and capacity to be embedded in a variety of smart materials make it ideal for the shape sensing of soft continuum robots. In addition, its high-frequency refresh rate (>100 Hz) permits even real-time shape reconstruction. Provided with its various advantages of integration and sensing performance, it is foreseen to resolve many unmet challenges in soft robotic modelling and control. The potential application and trend will be introduced and discussed in this talk.

ALL INTERESTED ARE WELCOME

For further information, please contact Dr. K.W. Kwok at 3917 2636.

Research area: Robotics and Control