

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

Title: From soft robots to garment deformation: an introduction on artificial intelligence (AI)'s potential in finite-element analysis (FEA)

Speaker: Miss Li Yingqi (PhD candidate)
Department of Mechanical Engineering
The University of Hong Kong
Hong Kong

Date: 27 April, 2021 (Tuesday)

Time: 2:30 p.m.

Zoom Link: 1) Link to join the meeting:

<https://hku.zoom.us/j/95071412596?pwd=ZEpyZDk4MitpQnZlUHpsaHdtT3lvZz09>

2) Meeting ID: 950 7141 2596

3) Password: 276359

Abstract:

Finite element analysis (FEA), which can discretize the entire object into thousands of tiny node-connected elements and offer numerical simulation of continuous models, is a prevailing and realistic simulation approach as it is based on mechanics core. Particularly in the field of simulation on complicated and large deformation, including the morphology analysis of soft robots and draping simulation of fabrics, FEA is the gold standard. However, it is challenging to obtain simulation results in real-time caused by the complex set-up and iterative computation process in FEA, which hinders the prompt feedback in time-sensitive applications. Recently, some research on data-driven methods to accelerate the time-consuming computation procedure is emerging, such as compressive sensing in magnetic resonance imaging with deep learning. The powerful mapping ability of AI inspires the idea, training models to learn from FEA dataset, capable of providing online morphology information. Different from compressive sensing and computational fluid dynamics, which have been validated successfully in prediction with AI, FEA brings up unique challenges for AI. In this talk, the feasibility and great potential of AI as a fast and accurate surrogate of FEA and possible challenges will be discussed.

ALL INTERESTED ARE WELCOME

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

Research area: Robotics and Control