THE UNIVERSITY OF HONG KONG

DEPARTMENT OF MECHANICAL ENGINEERING

SEMINAR

Online

Title: **Image reconstruction using single-pixel camera via compressed sensing**

Speaker: **Mr. HAO Yifeng (PhD candidate)**
Department of Mechanical Engineering
The University of Hong Kong
Hong Kong

Date: **3 May, 2022 (Tuesday)**

Time: **10:30 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:
Typical cameras based on CCD or CMOS digital technologies use an array of millions of detectors to capture the image. In contrast, the single-pixel camera is able to reconstruct the images using a single-pixel detector, providing high resolution and cheap price for imaging at non-visible wavelengths. This talk will cover the principle of the single-pixel camera, including both the hardware setup in aspects of modulation schemes, mask design, and the reconstruction algorithms. A sequence of mask patterns, generated by modulation technologies like the digital micromirror device (DMD), filter the target scene, and the overall intensity is captured by the single-pixel detector. The image of the scene can be reconstructed using fewer measurements than the overall pixels via compressed sensing theory, in which way we can achieve sub-Nyquist image acquisition. With its unique characteristics, the single-pixel camera holds potential for a variety of applications, such as 3-D image reconstruction in non-visible wavelengths and special environments. The recent applications and the latest research outcome will also be 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