



Department of  
Mechanical Engineering  
The University of Hong Kong



## SEMINAR

### Event-based Stereo Visual Inertial Odometry

- Date:** 29 March, 2023 (Wednesday)  
**Time:** 9:30 a.m.  
**Venue:** Room 7-34, Haking Wong Building, HKU
- Speaker:** Mr. Peiyu Chen (PhD candidate)  
Department of Mechanical Engineering  
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#### Abstract:

State estimation is the most fundamental topic in the field of robotics, such as navigation with avoidance, autonomous driving, and virtual reality. Due to the inherent limitations of the standard cameras, such as motion blur and low dynamic range, most image-based VIO systems might be trapped in poor feature detection and tracking under high-speed motions or the high-dynamic-range (HDR) scenarios. Event cameras that asynchronously output low-latency event streams provide great opportunities for state estimation under challenging situations. Despite event-based visual odometry having been extensively studied in recent years, most of them are based on the monocular, while few research on stereo event vision. In this presentation, we introduce ESVIO, the first event-based stereo visual-inertial odometry, which leverages the complementary advantages of event streams, standard images, and inertial measurements. Our proposed pipeline includes the ESIO (purely event-based) and ESVIO (event with image-aided), which achieves spatial and temporal associations between consecutive stereo event streams. A well-design back-end tightly-coupled fused the multi-sensor measurement to obtain robust state estimation.

ALL INTERESTED ARE WELCOME

For further information, please contact Dr. P. Lu at 3910 2548.