

**DEPARTMENT OF MECHANICAL ENGINEERING****SEMINAR****Online****Title:** Robust Real-time LiDAR-inertial Initialization**Speaker:** Mr. Zhu Fangcheng (PhD candidate)
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Hong Kong**Date:** 28 April, 2022 (Thursday)**Time:** 4:30 p.m. (Hong Kong Time)**Zoom meeting:** 1) Link to join the meeting:<https://hku.zoom.us/j/94473734652?pwd=U3JYMWZZbXVtMU91THNtUWJxQm9oUT09>

2) Meeting ID: 944 7373 4652

3) Password: 972319

Abstract:

For most LiDAR-inertial odometry, accurate initial states, including temporal offset and extrinsic transformation between LiDAR and 6-axis IMUs, play a significant role and are often considered prerequisites. However, such information may not be always available in customized LiDAR-inertial systems. In this paper, we propose LI-Init: a full and real-time LiDAR-inertial system initialization process that calibrates the temporal offset and extrinsic parameter between LiDARs and IMUs, and also the gravity vector and IMU bias by aligning the state estimated from LiDAR measurements with that measured by IMU. We implement the proposed method as an initialization module, which, if enabled, automatically detects the degree of excitation of the collected data and calibrates the temporal offset, extrinsic, gravity vector, and IMU bias, which are then used as high-quality initial state values for real-time LiDAR-inertial odometry systems. Experiments conducted with different types of LiDARs and LiDAR-inertial combinations show the robustness, adaptability, and efficiency of our initialization method. The implementation of our LiDAR-inertial initialization procedure LI-Init and test data are open-sourced on Github and also integrated into a state-of-the-art LiDAR-inertial odometry system FAST-LIO2.

ALL INTERESTED ARE WELCOME

For further information, please contact Dr. F. Zhang at 3917 7909.

Research areas: Robotics and Control