

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

**Title:** Extrinsic Calibration of Multiple LiDARs of Small FoV in Targetless Environments

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**Date:** 22 April, 2021 (Thursday)

**Time:** 4:00 p.m.

**Zoom Link:** 1) Link to join the meeting:

<https://hku.zoom.us/j/92854317369?pwd=UmozZnhtUkpDS3pqR0dPRlZkejhdZz09>

2) Meeting ID: 928 5431 7369

3) Password: 038905

**Abstract:**

LiDAR, which stands for Light Detection and Ranging, has been widely implemented in autonomous driving, navigation, and mapping applications. Based on such micro-electromechanical systems (MEMS), solid-state LiDAR is becoming a promising type of sensor. Compared with mechanical spinning LiDAR, solid-state LiDAR enjoys a more compact size, higher resolution, and is more cost-efficient. The integration of multiple solid-state LiDARs could achieve similar performance to a spinning LiDAR by focusing on the dedicated area of interests. However, due to their small FoV settings, it is required to rely on external sensors or form FoV overlaps to calibrate the extrinsic parameters between multiple LiDAR units. To overcome such limitations, we develop a targetless calibration method, which creates FoV overlaps (hence co-visible features) through movements and constructs a factor graph to resolve the constraints between LiDAR poses and extrinsic parameters. By solving the formulated problem with graph optimization, our proposed method could calibrate the extrinsic of LiDARs with few or even no overlapped FoVs, meanwhile, produce a globally consistent point cloud map. Experiments on different sensor setups and scenes have demonstrated the accuracy and robustness of our proposed approach.

**ALL INTERESTED ARE WELCOME**

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

**Research area: Robotics and Control**