THE UNIVERSITY **OF HONG KONG**

DEPARTMENT OF MECHANICAL ENGINEERING

SEMINAR

Online

Title: ikd-Tree: An Incremental K-D Tree for Robotic Applications

Speaker: Mr. Yixi CAI (PhD candidate)
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Date: 22 April, 2021 (Thursday)

Time: 11:00 a.m.

Zoom Link: 1) Link to join the meeting:

https://hku.zoom.us/j/98418551055?pwd=a0FHVE1uUS9kWFlldUIzczdqSlp2QT09

2) Meeting ID: 984 1855 1055

3) Password: 158377

Abstract:
The K-Dimensional Tree (K-D Tree) is an efficient data structure that organizes multi-dimensional point data which enables fast search of nearest neighbors, an essential operation that is widely required in various robotic applications. For example, in LiDAR odometry and mapping, k-d tree-based nearest point search is crucial to match a point in a new LiDAR scan to its correspondences in the map (or the previous scan). Nearest point search is also important in motion planning for fast obstacle collision check on point-cloud. This seminar will introduce an efficient data structure, ikd-Tree, for dynamic space partition. The ikd-Tree incrementally updates a k-d tree with new coming points only, leading to much lower computation time than existing static k-d trees. The design and implementation of incremental updates and nearest search on ikd-Tree will be introduced in detail together with validation on both theory and practice level.

ALL INTERESTED ARE WELCOME
For further information, please contact Dr. F. Zhang at 3917 7909.

Research area: Robotics and Control