

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

Title: A Bi-directional Thrust Unmanned Aerial Vehicle (UAV) for Perching

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Date: 28 April, 2022 (Thursday)

Time: 3:00 p.m. (Hong Kong Time)

Zoom meeting: 1) Link to join the meeting:

<https://hku.zoom.us/j/94473734652?pwd=U3JlYmZlZzBxVtMU91THNtUWJxQm9oUT09>

2) Meeting ID: 944 7373 4652

3) Password: 972319

Abstract:

UAVs have the potential to monitor, measure and model high-rise buildings and bridges. These tasks require UAVs to operate for a long time and have excellent position accuracy. Perching the UAVs on the environmental structures is a promising solution by mimicking birds resting in nature. Apart from extending flight time, the degrees of freedom of UAVs are reduced in the perched state so that the stability is improved and the risks to humans are reduced. Recent research has shown that a multi-rotor UAV consumes much less power when its propellers are very close to a planar surface, known as the ceiling effect. Perching UAVs on various planes at any angle by utilizing the ceiling effect is thereby proposed. A bi-directional thrust quadrotor with control algorithms is developed regarding this objective. The quadrotor is able to reach unusual attitudes and stay for perching. Yet the required mechanical add-ons are minimal and this method can be easily adopted in existing UAVs.

ALL INTERESTED ARE WELCOME

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

Research areas: Robotics and Control