THE UNIVERSITY OF HONG KONG

DEPARTMENT OF MECHANICAL ENGINEERING

SEMINAR

Online

Title: An Underwater Manipulator with Depth-Independent Sensing

Speaker: Mr. Huang Chaoyi (PhD candidate)
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Date: 27 April, 2022 (Wednesday)

Time: 10:45 a.m. (Hong Kong Time)

Zoom meeting: 1) Link to join the meeting:

https://hku.zoom.us/j/8760362506?pwd=QlFMWHZIMTk0SU8vellLZ2lDL2prdz09

2) Meeting ID: 876 036 2506

3) Password: 123456

Abstract:
For underwater exploration, a manipulator is an essential component for sampling and other interactive tasks. Compared to the conventional rigid body manipulators that required substantial size and weight, soft robotics could offer compact structure and multi-dimensional interaction ability. The interference caused by water pressure variation is critical for the hydraulic soft actuation and sensing. In this talk, a sensing framework of the hall-effect silicone force sensor and an IMU-based posture sensor is proposed to improve the sensing ability for underwater manipulation. The water non-absorbent properties of silicone gel make the force sensor unaffected by different water pressure. By calibrating relative position, the sealed IMUs could predict the local posture of the soft actuators. A novel soft robotic manipulation system based on this framework is developed and experimental results are presented to demonstrate its effectiveness.

ALL INTERESTED ARE WELCOME
For further information, please contact Prof. J. Lam at 3917 2805.

Research areas: Robotics and Control