



SISP 1303

Intelligent Sensing Technologies

Course Description

The course is aimed at encouraging secondary students' interest in STEM education. This course is designed to illustrate the interesting link between Science, Technology, Engineering and Mathematics with daily life sensing technologies. The students work in teams / individually and improve their knowledge of technology through fun and enlightening activities. Throughout the lectures, students explore some fundamental engineering technologies include sound generation, signal spectrum, color detection, temperature detection and distance measurement. They further extend with their high-school Science and Mathematics knowledge into advanced technologies and their applications. The applications on motion sensors, hand gesture detection, face detection and recognition are examined with hands-on practice.

Topics

1. Sensors
2. Laboratory Experiment (Sensors applications: Light, Temperature Sensor)
3. Sound Wave and Laboratory Experiment (Build an electric piano)
4. Introduction to Image Processing and its Applications
Laboratory Experiment: Color decomposition and finger detection
5. Search on Sensing Applications on Robotics

Science principles and Mathematics techniques involved will be introduced within each topic.

Grading Scheme

- Homework Assignments (20%)
- Laboratory Assignments (20%)
- Final Examination (60%)

[Topics and grading schemes are subject to change as deemed appropriate. Students will receive information and guidelines in class on how they will be assessed for the course.]

Attendance Requirement

Class attendance is expected and required. The minimum attendance required is 70%.

Instructors

Prof. Tim WOO

Prof. Woo has been very actively involved in teaching innovation. Beside developing different experiential learning courses, he supervises the HKUST Robotics team in joining various robot design competitions. Prof. Woo is the founding director of Center for Global & Community Engagement (GCE), School of Engineering. The center provides a major student enrichment program for UG engineering students in liaising with professional associations and community organizations. In addition, he is also a founding associate director of Academy for Bright Future Young Engineers in promoting STEM education to primary and secondary school students. Prof. Woo has received 3 teaching awards, including the University Grants Committee (UGC) Teaching Award 2015, (encompassing all Hong Kong's UGC-funded institutions), the Michael G. Gale Medal for Distinguished Teaching 2015, (a HKUST-wide award that celebrates one outstanding educator annually), and the School of Engineering's Teaching Excellence Appreciation Award 2009-2010.

Dr. Man Fung CHEUNG

Dr. Cheung is a Teaching Associate in the Department of Physics. Besides teaching university Physics courses, he is also an instructor in The Center for the Development of the Gifted and Talented in HKUST. He was elected three times as one of the Ten Best Lecturers in 2013-2015.