SISP 1303 Intelligent Sensing Technologies

Course Description
Aiming at encouraging students’ interest in engineering, this course is designed to illustrate the interesting link between science, technology, engineering and mathematics. Students will work in teams or individually and improve their knowledge of technology through fun and enlightening activities. Throughout the lectures, students will explore some fundamental engineering technologies including sound generation, color detection, temperature detection and distance measurement. They will further extend their high-school Mathematics knowledge into advanced technologies and their applications. Applications on motion sensing remote control robot, human motion sensing, hand gesture detection, face detection and recognition are examined with hands-on practice.

Topics
1. Overview of Mathematics
2. Search on Sensing Applications on Robotics
3. Sound Wave (Lab 1: Build an electric piano and its instruments, Lab 2: Tools for electronics circuit design)
4. Sensors
5. Laboratory experiment (Lab 3: Sensors applications: light, temperature sensor, Lab 4: Motion sensor, LCD)
6. Introduction to Image Processing and its Applications (Lab 5: Color decomposition and finger detection)

Grading Scheme
- Laboratory assignments (30%)
- Essay (10%)
- 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.]

Instructor
Prof Tim WOO
Prof Woo received his BEng, MPhil and PhD degrees in Electrical and Electronic Engineering from HKUST. He has been a member of the Department of Electronic and Computer Engineering at HKUST since 1997, and is the Founding Director of Center for Global & Community Engagement Program and Associate Professor of Engineering Education at HKUST. Prof Woo is also the supervisor of the HKUST Robotics Team and has led team members to winning championships and achieving remarkable results at various international competitions and contests. He has received a number of teaching awards, including the University Grants Committee (UGC) Teaching Award 2015 (encompassing all Hong Kong’s UGC-funded institutions), and the Michael G. Gale Medal for Distinguished Teaching Award 2015, which is the highest award that HKUST gives to a professor for exemplary teaching. Prof Woo has been teaching SISP 1303 for Summer Institute since 2011. Both Prof Woo and the course have been evaluated highly by previous Summer Institute participants.