

Keynote Paper:
**Engineering Education to support a World of Enhanced Connectivity
and Innovation**

Prof. Yeung YAM (任扬)

Associate Dean, Faculty of Engineering, Chinese University of HK (CUHK), [HKSAR
yyam@mae.cuhk.edu.hk](mailto:yyam@mae.cuhk.edu.hk)

ABSTRACT

The tremendous advances in technologies during the past few decades have shaped the world profoundly and the trend will only accelerate in coming years. This talk is aimed at exploring future engineering education under such context. What fundamental knowledge and implementation training we should be providing our engineering students? How can we motivate and prepare them with the proper attitudes and solution skills to tackle important problems and applications of future society? How to encourage them to adopt a global view from earlier on and to acquire the mindset to compete across geographical boundaries? And how best to deliver the above educational content?

Keywords: Engineering Education, Connectivity, Innovation

Relevant Information searched by the Editor from www.mae.cuhk.edu.hk :-

The Department of Mechanical and Automation Engineering, CUHK

1. Department Mission Statement

To educate and cultivate future technology innovators and leaders based on fundamental knowledge, analytical skills, practical training, and ethics in the areas of mechanical engineering, robotics, automation, energy engineering, and beyond.

2. Department Briefing

The Department of Mechanical and Automation Engineering (MAE) was established in 1994 with 5 faculty members in the areas of control, CAD/CAM, robotics, and computer vision transferred from other departments. Currently, the Department offers programmes leading to BEng, MSc, MPhil and PhD degrees, and starting from 2012-13, a newly established undergraduate degree programme in Energy Engineering. There are 22 faculty members including 10 Professors, 1 Associate Professor, 8 Assistant Professors, 1 Research Assistant Professor, 1 Senior Lecturer and 1 Lecturer. Many of our faculty members have established themselves as the world class scholars. As the smallest mechanical engineering department in Hong Kong, we have 1 member of Chinese Academy of Engineering, 4 IEEE Fellows, 3 ASME Fellows, and several fellows of other major societies such as APS, IAPR, and IFAC. We are especially proud of the quality of our graduates.

Many of our graduates are successful entrepreneurs or technical leaders in Hong Kong. Over a dozen of our graduates have held faculty positions in reputable universities in the USA, Europe, Australia, and Hong Kong. Our students and colleagues have consistently received prestigious regional, national and international awards. Some awards received by the students and faculty members of the MAE Department in recent years are as follows: two China State Natural Science Second Prizes, 2010 and 2013; two Natural Science Awards (one first prize and one second prize) from Ministry of Education, China, 2011 and 2012; ASME Design Automation Award, 2013; the Champion of First and Third IMechE Greater China Region Design Competition, 2012 and 2014; Neural Networks Pioneer Award of the IEEE Computational Intelligence Society, 2014; ASME Best Paper Award in Structures, 2008; IEEE/ASME Transactions on Mechatronics Best Paper Award, 2011; IEEE Transactions on Neural Networks Outstanding Paper Award, 2011.

The Department strives to be one of the best departments in Asia for educating and conducting research in Mechanical and Automation Engineering. For this purpose, the Department has identified five areas including Robotics and Control, Design and Advanced Manufacturing, Biomedical Devices and Systems, MEMS/Nano/Material Technologies, and Energy Technologies for focused investment and development.

3. Research Laboratories

- [Advanced Integrated Manufacturing Laboratory](#)
- [Advanced Nanomaterials and Micromachines Laboratory](#)
- [Advanced Robotics Laboratory](#)
- [Applied Control and Computing Laboratory](#)
- [Biomaterials and Stem Cell Tissue Engineering Laboratory](#)
- [Computer Aided Design Laboratory](#)
- [Electrochemical Energy and Interfaces Laboratory](#)
- [Intelligent Control Systems Laboratory](#)
- [Institute of Precision Engineering](#)
- [Laser Diagnostics and Combustion Laboratory](#)
- [Multi-scale Precision Instrumentation Laboratory](#)
- [Nano Energy Research Laboratory](#)
- [Networked Sensors and Robotics Laboratory](#)
- [Quantum Control Laboratory](#)
- [Smart Materials And Structures Laboratory](#)

Author's Background



Prof. YAM Yeung is a Professor of the Department of Mechanical and Automation Engineering at the CUHK. His general research interests include dynamics modeling and control, fuzzy approximation, human skill acquisition and automation systems. He is the Director of the Intelligent Control Systems Laboratory (LCSL), and also the Director of the CUHK-Beijing Institute of Technology Joint Research Center for Optomechatronics Design and Engineering (JRCODE). He and his team have engaged in a number of ITC-sponsored projects in advanced optical manufacturing in recent years. He is the General Chair of the International Symposium on Optomechatronic Technologies to be held in Hong Kong on November 1-3, 2011. He also served for many years as a member of the Judging Panel for the Hong Kong Award for Industry in the Machinery and Equipment Design category. YAM Yeung received his bachelor degree in Physics from CUHK, and his M.Sc. and Sc.D. degrees in Aeronautics and Astronautics from the Massachusetts Institute of Technology. Before returning to teach at CUHK, he was a member of the Technical Staff in the Control Analysis Research Group at the Jet Propulsion Laboratory, Pasadena, CA, USA. He has published over 150 technical papers in his areas of interest.