

Department of MECHANICAL ENGINEERING



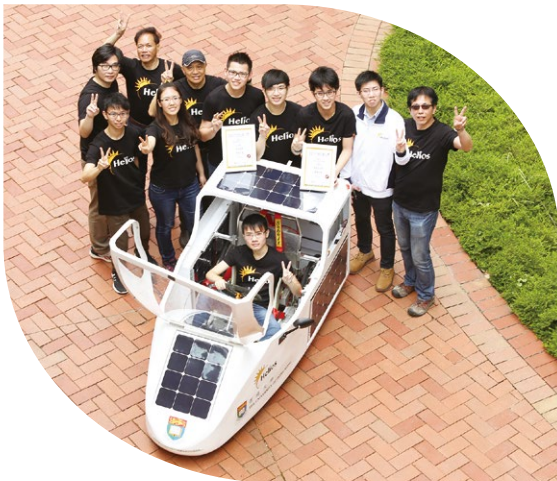
香港大學
THE UNIVERSITY OF HONG KONG

October 2016

2015-2016 Activities highlights

We are delighted to report that our students and staff had a very successful 2015-2016 academic year. The students had won awards and recognition in regional and international competitions, through successful applications of knowledge they learned in classroom and tremendous dedication to their aspirations.

Below are excerpts from news/articles in the departmental web site (www.mech.hku.hk). Scan the QR Codes to read more details.



HKU Engineering award-winning solar car is ready for public exhibitions in JUPAS Information Week

HKU solar car team – Helios, won both the Overall Champion Award and Innovative Design Award of the “New Energy New Generation” solar car competition organized by the Electrical and Mechanical Services Department (EMSD) in January 2016. During this six-month project, students applied their theoretical knowledge and engineering principles, gained practical experience through making and refining of mechanical and electrical components of the solar car.



Our DBF team won the 1st runner-up at the Taiwan Innovative UAV Design Competition

One of our HKU “Design Build and Fly” (DBF) teams won the 1st runner-up at the Taiwan Innovative Unmanned Aircraft Vehicle (UAV) Design Competition in March 2016. In this international competition, over 100 teams were required to design, fabricate and demonstrate the flight capabilities of a radio controlled aircraft which can best meet the specified challenges.



Our two teams: Tangofly (飛航探戈) on the left and Arrow (飛箭) on the right.

ME student selected for Boeing/Cathay Pacific/HAESL Internship Programme 2016-2017

Congratulations to our Year 2 student, Mr. Donald Mui Tak Long who has won one place out of the two for the highly competitive Boeing/Cathay Pacific/HAESL Internship Programme 2016. He will spend 6 months at Boeing (Everett, Washington, USA), and 6 months in Cathay Pacific and HAESL in Hong Kong in 2016-2017 to learn the frontier technology and knowledge in the field of aerospace engineering.

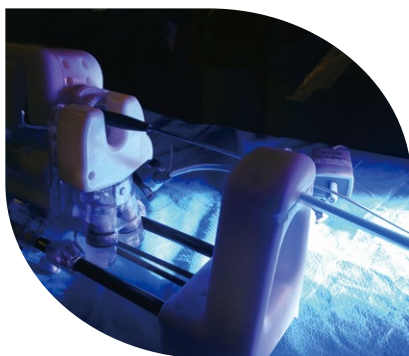


HKU team awarded Best Live Demonstration Prize at the Surgical Robot Challenge in London

The HKU team led by Dr. K.W. Kwok participated in the Surgical Robot Challenge, London. The Challenge is a world-renowned event open for application to showcase the latest innovations in the field of surgical robotics. Their proposed topic “MR-conditional Catheter Robot for MRI-guided Cardiac Electrophysiological Intervention”, which aims to improve the outcomes of therapeutic cardiac electrophysiology (EP) intervention – an effective treatment to arrhythmias, won the Best Live Demonstration Prize.



Hydraulic actuation system designed for driving the robot through fluid hoses. (top)
Prototype of a cardiac catheter robot capable to operate inside the MRI scanner. (right)



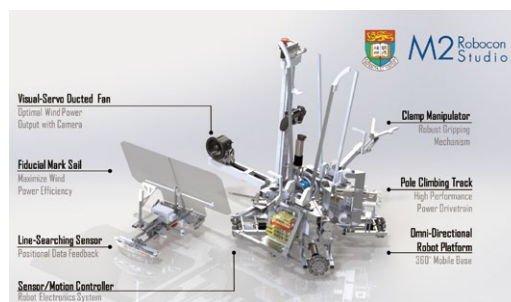
Our robotic team won the championship at The 5th IMechE Greater China Design Competition

Our HKU IMechE team won the Champion at Greater China Design Competition (GCDC) hosted by the Institution of Mechanical Engineers (IMechE) HK Chapter and held at the South China University of Technology in Guangzhou on March 19-20, 2016. The HKU team achieved all missions successfully, reaching a good balance between innovation and reliability.

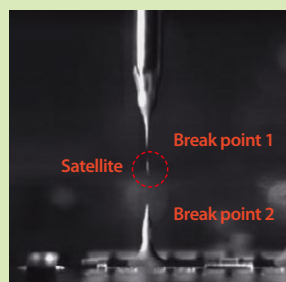


Best Artistic Design Award to the HKU Robocon team

Two teams from HKU Faculty of Engineering participated in the annual Robocon contest. In that competition, a robot has to go up a ramp, navigate a few bends, and go down a meandering slope without any power source to drive its wheels. The power has to come from another robot by non-contact means. During test runs on the game field, they did a best-time of 38 seconds. One of the teams was granted the “Best Artistic Design Award”.



IMechE Best Student Design Project Award



Stringing or tailing issue with satellite generation.

Mr. Hammad Ali Faizi (ME Year 4) and Mr. San To Chan (Engg Sci Year 4), won the prestigious IMechE- Best Student Design Project 2015-2016. They devised an approach for eliminating stringing and formation of satellite droplets. The competition was hosted by the Institution of Mechanical Engineers (IMechE) HK Chapter to recognize the contribution

to the mechanical industry from student design projects in terms of innovation, sustainability and applicability to industrial applications.



Ultra-portable folding electric kick scooter

The project “Ultra-Portable Folding Electric Kick Scooter” by two ME students has been selected by the Applied Science and Technology Research Institute in Science Park into its entrepreneurship fellow program for pre-incubation. The e-scooter was skillfully designed to be readily piggybacked on various public transport vehicles or cars after a simple folding mechanism.

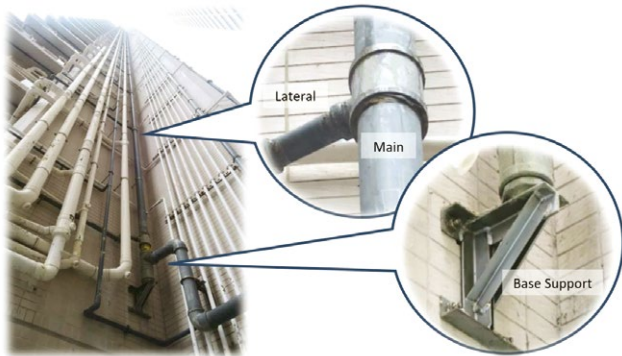


E-scooter designed by Mr. Boris Yim (PhD student) and Mr. Lawrence Cheung (ME Year 4).



Our M.Sc. student won the IGEM Young Persons Paper Competition 2016

Mr. Magnum So, a part-time MSc (ME) student and an engineer from the Hong Kong and China Gas Co Ltd, won the above award in the competition hosted by the Institution of Gas Engineers & Managers (IGEM), UK. His paper "Gas riser thermal stress analysis programme" is based on his MSc dissertation project in which a user-friendly computer software called the Gas Riser Thermal Stress Analysis Program is developed to predict stress in the riser induced by thermal expansion and contraction.



A typical residential gas riser configuration in Hong Kong.

The 2016 DreamCatchers 100K : A comprehensive, affordable, and easy-to-use motion tracking solution for sports training

A team of ME students created an Inertial Measurement Unit (IMU) based motion capture device called "Node", which can be used to measure the postures and movements of a sportsman, as well as a companion software which can conduct goal-based training, autonomous coaching, error detection, recommendation, ranking, matchmaking, and coach referral. They won the 2016 HKU Dream Catchers 100K award.

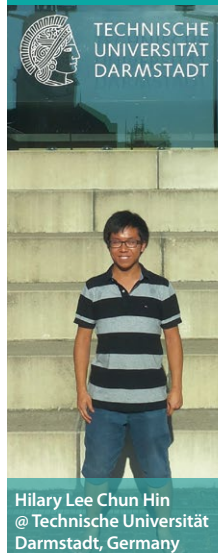


The "Node" hardware designed by Mr. Carlos Ma (ME PhD student) and Mr. Brian Lee (ME PhD student).

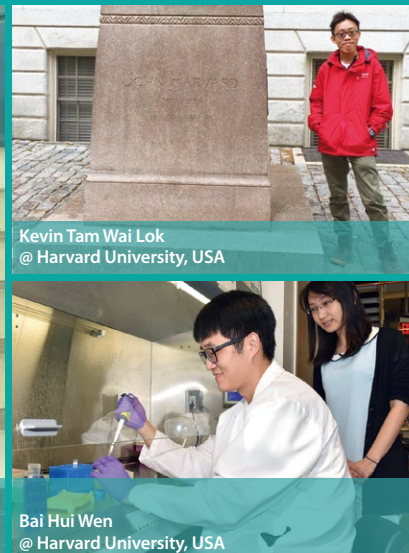
Student exchange

19 ME students going to these institutions for exchange in 2015-2016

Aalto University School of Science and Technology	Finland
Aberdeen (University of)	UK
Bremen University of Applied Sciences	Germany
Drexel University	USA
Embry-Riddle Aeronautical University	USA
Harvard University	USA
Illinois (University of) at Urbana-Champaign	USA
McGill University, Canada	Canada
Monash University	Australia
Nanyang Technological University	Singapore
Northeastern University, USA	USA
Ottawa (University of), Canada	Canada
Salzburg (University of)	Austria
Sheffield (University of)	UK
Technische Universität Darmstadt	Germany
Waseda University	Japan



Hilary Lee Chun Hin
@ Technische Universität
Darmstadt, Germany



Kevin Tam Wai Lok
@ Harvard University, USA



Bai Hui Wen
@ Harvard University, USA



Rahman Shakurur
@ McGill University,
Canada

20 exchange students from these overseas institutions came to study in the Department in 2015-2016

Aarhus University	Denmark
California (University of), Berkeley	USA
California (University of), Irvine	USA
Cardiff University	UK
Durham University	UK
Fudan University	China
Institut national des sciences appliquées de Toulouse	France
Kansas (University of)	USA
MINES ParisTech	France
Monash University	Australia
Pennsylvania State University	USA
Sabancı University	Turkey
Shanghai Jiao Tong University	China
Technische Universität Darmstadt	Germany
Tianjin University	China
Tsinghua University	China
Universiti Brunei Darussalam	Brunei
Wisconsin-Madison (University of)	USA

ME students' visit to France with government officials



The Chief Executive, Mr C Y Leung (back row, 9th right); the Secretary for Transport and Housing, Professor Anthony Cheung Bing-leung (back row, 11th right); the Secretary for Innovation and Technology, Mr Nicholas W Yang (back row, 7th right); and Hong Kong student delegates from HKU, CityU, CUHK, HKUST and PolyU at Airbus in Toulouse, France. (Courtesy of HKSAR Govt)

Four HKU ME undergraduates (Chan Ting Him, Lam Chun Chung, Ng Tsz Hang and Siu Man Kit) were selected to join the Hong Kong SAR Government delegation led by the Chief Executive, Mr. CY Leung for the visit to France in June 2016. The visit mainly focused on the latest developments in aviation, engineering, innovation and technology in France. They visited the cities of Toulouse and Paris, with a tour to the technology center and manufacturing sites of Airbus.



The visit to the air traffic control simulator at Ecole Nationale de l'Aviation Civile (National School of Civil Aviation) in Toulouse, France.

HKU and CUHK researchers introduce 3D printing technology in complex cardiac surgery procedure

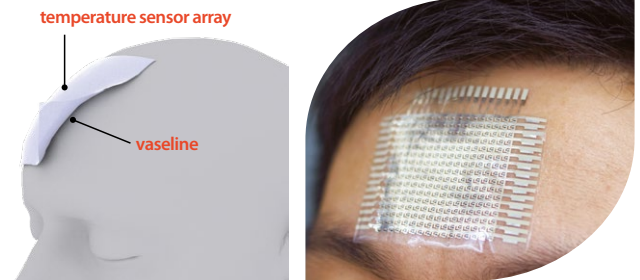
Dr. K.W. Kwok together with his collaborators have successfully applied echocardiographic data to create soft silicone-based models of complex cardiac structures using 3D printing. These models allow cardiologists to personalize planning for cardiovascular intervention for each patient. As a preparation for clinical trial, the technique was applied to a complex case of Left Atrial Appendage (LAA) occlusion.



3D Soft silicone-based models of complex cardiac structures.

Wearable organic semiconductor sensors for health monitoring applications

Recently, Dr. Paddy Chan's research team has successfully fabricated various kinds of health monitoring sensors including temperature, pulse and glucose sensors based on OFETs and similar structure. The success of these wearable sensors is expected to serve as the first guardian of our health and allow us to have immediate medical care.



The 16x16 (256 devices) temperature sensors have a temperature resolution of 0.2K and will be able to map out the temperature information of the object surface.

Contract research on ceramic matrix composite for 3D porcelain artwork

A research team led by Dr. S.P. Feng and Dr.W.D. Li has received HK\$1million from Ascending Star Ltd. for a contract research project entitled "Reinforcement and Direct Electroplating of Ceramic Matrix Composite", with project aims to support and promote the fundamental research of ceramic matrix composite and its potential application in the exquisite three-dimensional (3D) porcelain artwork.



3D ceramic artwork of pansy



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