



Department of

Mechanical and Automation Engineering

2017 Annual Report



2017 FACTS & FIGURES



GRANTS in total
HK\$145 MILLION

NO. OF PUBLICATIONS

159 

NO. OF GRANTS

36 

NO. OF AWARDS
received

40 

NO. OF DEPARTMENTAL SEMINARS

46 

NO. OF FACULTY MEMBERS

 **22** (3: NEW)

NO. OF SCHOLARSHIP RECIPIENTS

 **98** 
HK\$1,134,224 in total



NO. OF EXCHANGE STUDENTS

 **Incoming**

23

Undergraduates: 19
Postgraduates: 3

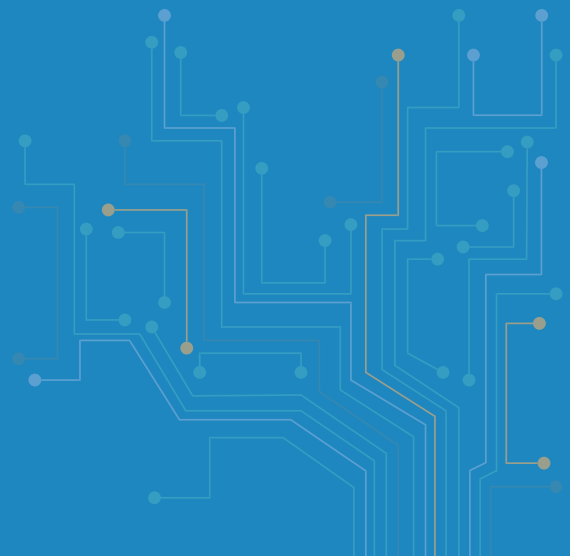
 **Outgoing**

24

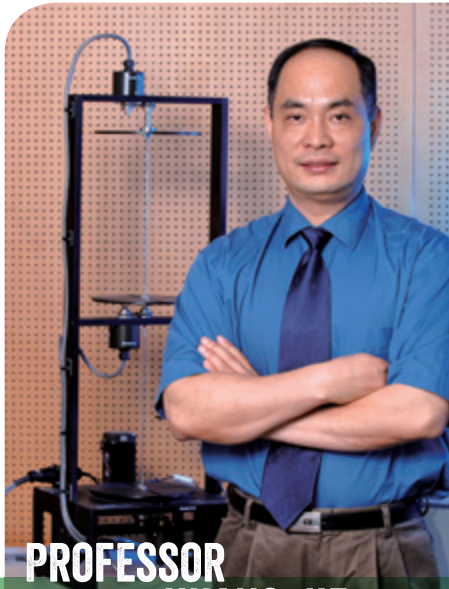
Undergraduates: 20
Postgraduates: 4

CONTENTS

I. MESSAGES	P. 2
II. ACHIEVEMENTS	P. 4
1. News Release	P. 4
2. Honors and Awards	P. 7
III. DEPARTMENT NEWS	P. 14
1. Department Affairs	P. 14
2. Faculty Distinguished Lectures	P. 17
3. Seminars	P. 18
4. Exhibitions	P. 22
5. Student Exchange	P. 24
6. Collaborations	P. 27
7. Statistics	P. 28
IV. UNDERGRADUATE NEWS	P. 32
V. ALUMNI NEWS	P. 35



MESSAGE FROM THE DEPARTMENT CHAIRMAN



**PROFESSOR
HUANG JIE**

Welcome to our first edition of the Annual Report of the Department of Mechanical and Automation Engineering. We aim to keep you informed about our recent achievements and news from the Department. I am most delighted to share with you the major department activities and achievements between 1 January 2017 and 31 December 2017.

The year 2017 marks our 23rd year of the Department of Mechanical and Automation Engineering (MAE Department). Within the past twenty-three years, our Department has experienced enormous expansion. Starting from having 8 faculty members and 29 students who admitted for our single undergraduate programme in 1994 when the Department was established, we now have a total of 22 faculty members and 100 undergraduates graduating from two different programmes: Bachelor of Energy Engineering (ENER) Programme and Bachelor of Mechanical and Automation Engineering (MAEG) Programme in 2017.

The MAE Department aims at nurturing future technological leaders and talents. Our Department has identified six core research areas including Design and Manufacturing, Energy/Building/Environmental Technologies, Intelligent Systems, MEMS/Nano/Molecular Technologies, Robotics

and Automation, and Systems and Control. Under the dedication and efforts of students and faculty members, our students and colleagues consistently receive renowned regional, national and international awards. Moreover, numerous graduates of MAE have become successful entrepreneurs, technical leaders and prominent scholars in reputable universities around the world. With our commitment to excellence in education and research, we hold strong belief in our Department to maintain leading status in Asia and keep scaling new heights in the future.

In the past year, our students and colleagues have received various honours and awards: Champion at the IMechE Greater China Region Design Competition 2017, Fellow of the Canadian Academy of Engineering (CAE), Fellow of HKIE, ASME Best Paper Award in Mechanics and Material Systems, honours from "Challenge Cup" National Competition – Hong Kong Regional Final and 15th National Challenge Cup, to list just a few. It is also worth highlighting that in 2017 our colleagues have published a total of 159 research publications that are reputable in their respective fields, and attracted a total of 145 million Hong Kong Dollars of grants and private funding. Hence, I would like to extend my congratulations on the achievements and express my gratitude to the efforts of our colleagues and students.

Last but not least, our Department would like to give a warm welcome to 3 new faculty members: Assistant Professor XU Yunjian, Assistant Professor ZI Yunlong, and Lecturer HAN Dongkun. With contribution from our current faculty members, we strive to be a leading department in Asia and the world for educating students and conducting research in mechanical and automation engineering.

Professor HUANG Jie
Chairman,
Department of Mechanical and Automation Engineering

MESSAGE FROM THE EEEN PROGRAMME DIRECTOR



**PROFESSOR
YAM YEUNG**

Energy and environment are among the most important subjects facing the 21st century. The Energy and Environmental Engineering (EEEN) Programme at CUHK provides a comprehensive platform for students to learn about the complexities and inter-linkages of these two subjects, and to acquire the technological know-hows for possible tradeoffs and solutions. The Programme leverages on the broad academic coverage of CUHK as a comprehensive university, and the support of a host of CUHK entities, including the Institute of Environment, Energy and Sustainability (IEES), the Jockey Club Museum of Climate Change, and the Institute of Future Cities. The Programme is designed for engineering-minded students with aspiration to help make the world greener and sustainable for future generations.

The curriculum of EEEN is a product of academic collaborations between relevant disciplines in the Faculties of Engineering, Social Science, and Science. Students are trained on a set of courses spanning the topics of energy principles, environmental studies, urban pollutions, smart building design and control, as well as energy assessment and management. In addition to basic training, students also have the option of electing special courses of their interest, leading to the stream designations of Sustainable Energy Technology, Green Building Technology, and Environmental Engineering. Both classroom teaching and hands-on practice are emphasized. We envision

great career prospects for our graduates within utility companies, energy-related firms, green technology startups, government agencies, and the building design and service sector.

We are happy to report that the year 2017 has been a very successful year for the Programme. We have recruited two new young faculty members with outstanding track records specializing in the field of energy market and harvesting technologies. They will add to the tremendous strength of faculty members already on board for the Programme. We have also conducted our first ever HKIE Accreditation Exercise and successfully acquired the accreditation status. The University has also allocated more space for the establishment research laboratories in the areas covered by the Programme. For admission, we gained for our own separate JUPAS Code: JS4462 for admitting students to the Programme.

We are most excited about the future prospects of the EEEN Programme as a new and vibrant field of study. The importance of its subject matters will only grow in time. We welcome our readers to find out more about this relevant and exciting programme from the following pages.

Professor YAM Yeung
Director,
Programme of Energy and Environmental Engineering

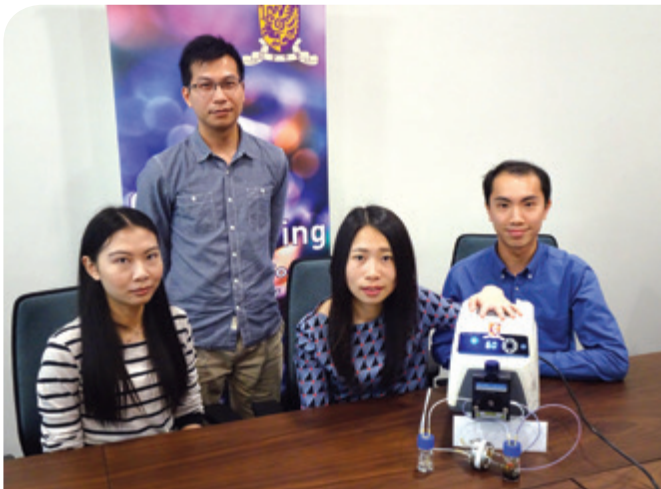
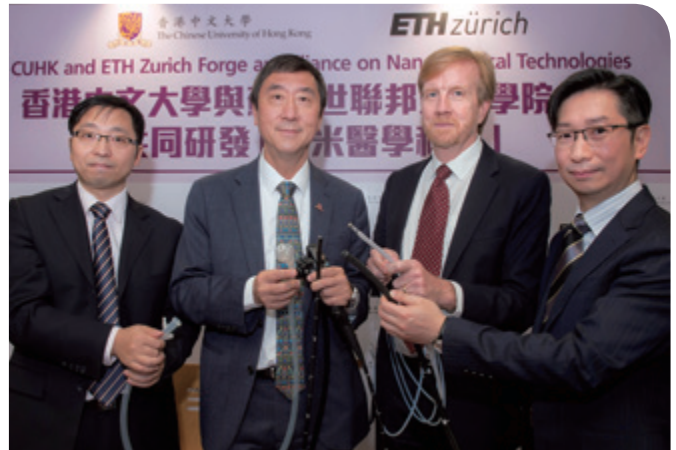
ACHIEVEMENTS

NEWS RELEASE

MARCH

CUHK and ETH Zurich Forge an Alliance on Innovative Technologies for Gastrointestinal Diseases

Prof. ZHANG Li (left), Associate Professor from the MAE Department, collaborated with the Faculty of Medicine of CUHK and Institute of Robotics and Intelligent Systems at ETH Zurich to develop innovative technologies for gastrointestinal diseases. By forging the alliance, CUHK and ETH will develop a novel magnetic guided biopsy forceps for tissue sampling. The team will soon commence pre-clinical testing and target the system to conduct clinical trial in three years.



APRIL

Breakthrough in Energy Storage Technology - CUHK Develops Aqueous Redox Flow Battery with Record Energy Density

The research team of Assistant Professor from the MAE Department, Prof. LU Yi-Chun (middle right), has recently developed a high-energy-density zinc/iodine-bromide redox flow battery (ZIBB). ZIBB could reach the highest reported energy density for aqueous redox flow batteries to-date. This breakthrough was published in the renowned journal Energy & Environmental Science, and was featured in the magazine Chemistry World, published by The Royal Society of Chemistry, United Kingdom in year 2017.

MAY

Lending Surgeons a Helping Hand - Prof. AU Kwok Wai Samuel

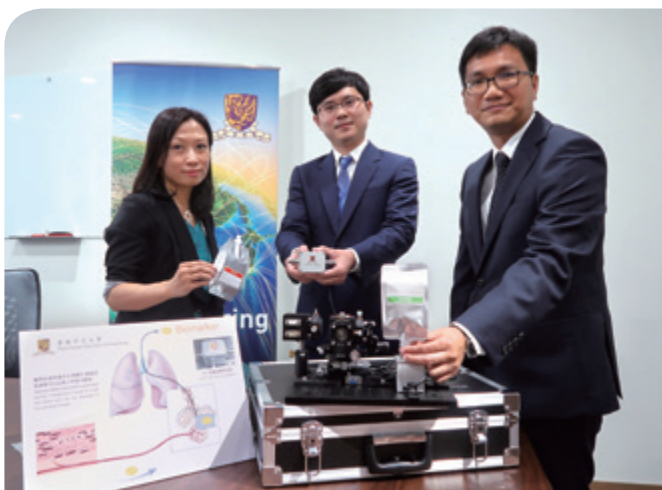
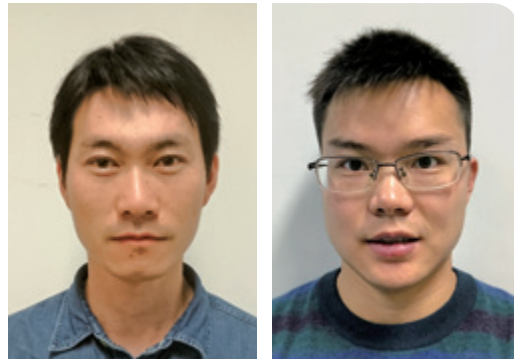
Prof. AU Kwok Wai Samuel, Associate Professor of the MAE Department and the co-inventor of the da Vinci Single-Site surgical platform, was featured in the CUHK Newsletter. As the first batch of students from the MAE programme, Prof. AU talked about his path of designing robot-assisted medical devices and his current ambition in making bona fide scarless robotic surgery. To read more about Prof. AU's story, please visit <https://www.iso.cuhk.edu.hk/images/publication/newsletter/498/pdf/NSL498.pdf?20170619>.



JULY

MAE Postdoctoral Fellows Appointed by Hong Kong Scholars Program

Dr. ZHAO Songjian (left) and Dr. LI Liang (right), postdoctoral fellows of Prof. CHEN Yongsheng and Prof. LIAO Wei-Hsin of the MAE Department respectively, have been appointed as "Hong Kong Scholars". The "Hong Kong Scholars Program" is jointly launched by the Society of Hong Kong Scholars and the China National Postdoctoral Council under the Ministry of Human Resources and Social Security. The programme aims to train outstanding postdoctoral fellows through collaboration of Hong Kong and Mainland China.



JULY

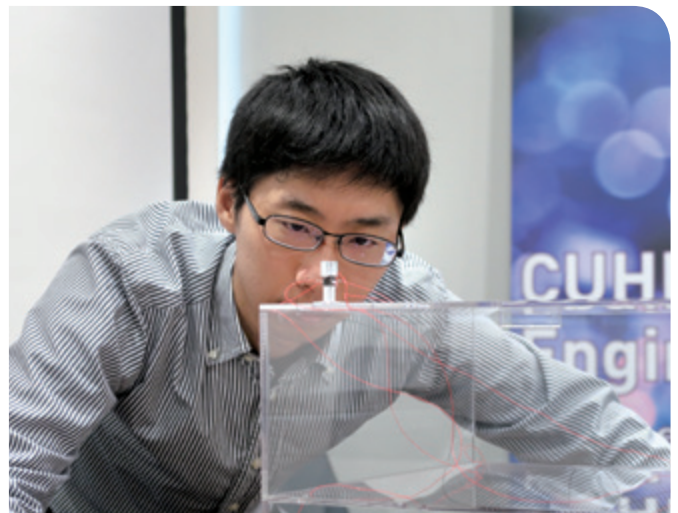
CUHK Faculty of Engineering Develops a Small, Portable, Low-Cost Gas Sensing System

The team led by Prof. REN Wei (middle), Assistant Professor of the MAE Department, has developed a portable gas sensing system with high sensitivity, which could be used as an assistive tool to facilitate diagnosis via analysing air exhaled by patients. Operational costs could be significantly reduced by using quartz-enhanced photoacoustic spectroscopy (QEPAS). Moreover, the system could allow quick and accurate measurement of various pollutants including nitric oxide, carbon monoxide, and formaldehyde.

OCTOBER

MAE Professor Develops Self-Running and Self-Floating Levitation Actuator Using Principle of Near-Field Acoustic Levitation for Future Levitating Transport

Prof. GUO Ping, Assistant Professor from the MAE Department, and his research team, have developed a self-running and self-floating two-dimensional actuator with application of near-field acoustic levitation. The device can tackle the problem of high power consumption and cast off the limitation of the existing magnetic levitation technology, and hence it can be used for transportation. Moreover, this technology is also applicable to precision machining and precision driving, including laser processing and flaw detection.





NOVEMBER

The Journal Indoor Air Reported the Research About the Performance of Nanofiber Window Screens in Reducing Indoor Exposure to PM2.5 of Outdoor Origin

Prof. ZHANG Li (left), Associate Professor from the MAE Department, and Prof. CHEN Chun (right), Assistant Professor from the MAE Department, have published their research about the effect of nanofiber filter on reducing amount of PM 2.5. Their breakthrough has been published on Indoor Air, which is a renowned journal in the field of construction and architectural engineering. With the use of the nanofilter, lower residential exposure to PM2.5 of outdoor origin could be achieved.

NOVEMBER

MAE Professor Utilizes Biohybrid Magnetite Microrobots for Imaging-guided Therapy

Prof. ZHANG Li (right), Associate Professor from the MAE Department, has developed Biohybrid Magnetite Microrobots which can be remotely controlled to propel in complex biological fluids with high precision by using magnetic fields. The findings were published on the outstanding AAAS's journal – Science Robotics. In the future, microrobots could be used for cancer treatment, they may also help to treat diseases which the afflicting regions are difficult to reach.



NOVEMBER

CUHK-DGIST-ETH Zurich Establish Joint Laboratory on Nano-technology for Gastrointestinal and Cardiovascular Diseases

Prof. ZHANG Li (right) from the MAE Department contributed in the Joint Research Laboratory on Innovative Nanotechnologies for Medicine and Healthcare. CUHK, the Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea and the Swiss Federal Institute of Technology Zurich (ETH Zurich), Switzerland are collaborating to establish the Joint Lab for the diagnosis and treatment of gastrointestinal (GI) and cardiovascular (CV) diseases.





SPIE PHOTONIC WEST 2017 – POSTER COMPETITION AWARD

Mr. WEN Chenyang PhD student
 Miss CHANG Yina PhD student
 (Supervisor: Prof. CHEN Shih-Chi)



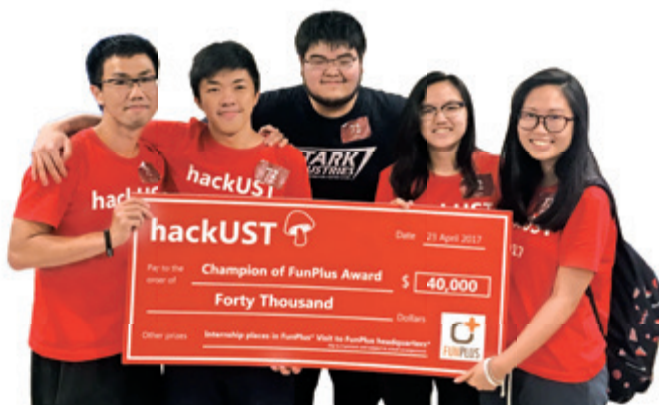
IMECHE GREATER CHINA REGION DESIGN COMPETITION 2017 – CHAMPION

Dr. LI Yiyang Faculty member
 Prof. XU Dongyan Faculty member
 Mr. LEUNG Yun Yee Technician
 Mr. YIP Kwan Yi UG student
 Mr. YIP Ka Chun UG student
 Mr. YIP Chi Yiu UG student
 Mr. CHIU Sin Hang UG student
 Mr. HO Wing Hang UG student
 Mr. LEUNG Chun Hei UG student
 Mr. CHOW Ka Chung UG student
 Mr. YUE Felix Yun Fei UG student



HACKUST 2017 - CHAMPION (GAMING THEME)

Mr. SANTO Royce UG student
 Miss TAMARA-YUSTIAN UG student, broad-based
 Miss LIU Winnie Hiyadi UG student
 Mr. NICHOLAS Nigel UG student, CSCi



FELLOW OF THE HONG KONG INSTITUTE OF ENGINEERS (HKIE)

Prof. HUANG Jie Faculty member



PROFESSOR CHARLES K. KAO STUDENT CREATIVITY AWARDS 2017

(Postgraduate Entries)

NAME OF AWARDEE		AWARD AND PROJECT TITLE
Mr. GAO Fei (Supervisor: Prof. LIAO Wei-Hsin)	PhD student	Champion (Individual) Project: Smart Prosthesis for Below-Knee Amputees
Mr. WANG Dien Mr. WEN Chenyang Miss CHANG Yina Miss LEE Hiu Hung (Supervisor: Prof. CHEN Shih-Chi)	PhD student PhD student PhD student PhD student	Champion (Group) Project: 3D Metal Printing Based on Parallel Femtosecond Laser Machining and Electrodeposition
Miss WANG Ji (Supervisor: Prof. CHEN Shih-Chi)	PhD student	First Runner-Up (Individual) Project: Flexure-Based Vibrating Blade Microtome for High-Resolution Brain Imaging
Miss FENG Qian (Supervisor: Prof. BIAN Liming)	PhD student, BME	Second Runner-Up (Individual) Project: A Robust and Thermoplastic Supramolecular Gelatin Hydrogels for Tissue Engineering and Regenerative Medicine
Mr. DANG Xiaobing (Supervisor: Prof. DU Ruxu)	PhD student	Merit (Individual) Project: Incremental Bending of Three-Dimensional Free-Form Metal Plates Using Minimum Energy Principle and Model-Less Control
Miss LEE Hiu Hung Miss WANG Dongping (Co-supervisor: Prof. CHEN Shih-Chi)	PhD student PhD student	Merit (Individual) Project: 高分辨率、高靈敏度的便攜式光譜儀的研發

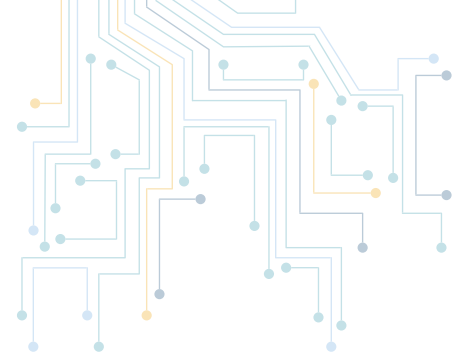


Mr. GAO Fei, the champion, was presenting his project.



Miss CHANG Yina (left) and Mr. WANG Dien (middle) received the champion prize for their research group.





(Undergraduate Entries)

NAME OF AWARDEE		AWARD AND PROJECT TITLE
Miss CHENG Hiu Yee (Supervisor: Prof. LAU Tat Ming Darwin)	UG student, BME	Champion (Individual) Project: Easy-To-Produce Functional Robotic Prosthetic Finger Driven by Human Intention
Mr. CHAN Ngo Foon Mr. LEE Ka Fai Mr. CHAN Ngo Ming (Supervisor: Prof. GUO Ping)	UG student UG student UG student	Champion (Group) Project: Multicolor Fused Deposition Modelling FDM Printing: An Application of Fused Multi-Filament Method
Mr. CHENG Hung Hon Miss YIP Hang Man (Supervisor: Prof. LAU Tat Ming Darwin)	UG student UG student, BME	First Runner-Up (Individual) Project: EMG-Driven Exomuscular Cable-Robot for Targeted Shoulder Rehabilitation
Miss CHAN Ka Ian (Supervisor: Prof. LIAO Wei-Hsin)	UG student, BME	Second Runner-Up (Individual) Project: Knee Rehabilitation Healthcare Device
Mr. CHAN Yuen Shan Mr. MA Fei Yeung Mathew Miss MOK Ching Wah (Supervisor: Prof. LAU Tat Ming Darwin)	UG student UG student UG student	Second Runner-Up (Group) Project: Spiderbot - Cable Driven Robot and Robot Arm System
Mr. TING Sin Hang Mr. POON Mong Wah Mr. YIP Kin Chiu Mr. LEUNG Wai Man (Supervisor: Prof. LAU Tat Ming Darwin)	UG student UG student UG student UG student	Second Runner-Up (Group) Project: Cable-Driven Robot for Large-Scale On-Site 3D Printing of Concrete Structures



Mr. CHAN Ngo Foon, Mr. LEE Ka Fai and Mr. CHAN Ngo Ming were presenting their project.



Miss CHENG Hiu Yee (middle), accompanying with Prof. LAU Tat Ming Darwin (left) received the champion prize.

Mr. DANG Xiaobing received the Top Prize and First-Class of Innovation Category for his project.



“CHALLENGE CUP” NATIONAL COMPETITION – HONG KONG REGIONAL FINAL, HONG KONG UNIVERSITY STUDENT INNOVATION AND ENTREPRENEURSHIP COMPETITION 2017

NAME OF AWARDEE		AWARD AND PROJECT TITLE
Mr. DANG Xiaobing (Supervisor: Prof. DU Ruxu)	PhD student	Top Prize and First-Class of Innovation Category Project: Incremental Bending of 3D Free Form Metal Plates: Theory, Prototype Machine and Applications
Mr. GAO Fei Mr. LIU Yannan (Supervisor: Prof. LIAO Wei-Hsin)	PhD student Research staff	Second-Class of Innovation Category Project: Smart Prosthesis for Below-Knee Amputees
Miss LEE Hiu Hung Miss WANG Dongping Dr. CHEN Jianwei (Co-supervisor: Prof. CHEN Shih-Chi)	PhD student PhD student Research staff	Second-Class of Innovation Category Project: Development of High-Resolution Compact Spectrometers Based on Custom-Printed Concave Gratings
Mr. CHAN Chun Kei (Supervisor: Dr. LI Yiyang)	UG student	Merit of Innovation Category Project: Portable Eyes
Miss CHENG Hiu Yee (Supervisor: Prof. LAU Tat Ming Darwin)	UG student	Merit of Innovation Category Project: Easy-To-Produce Functional Robotic Prosthetic Finger Driven by Human Intention
Mr. TING Sin Hang Mr. POON Mong Wah Mr. YIP Kin Chiu Mr. LEUNG Wai Man (Supervisor: Prof. LAU Tat Ming Darwin)	UG student UG student UG student UG student	Merit of Innovation Category Project: Cable-Driven Robot for Large-Scale On-Site 3D Printing of Concrete Structures

FELLOW OF THE CANADIAN ACADEMY OF ENGINEERING (CAE)

Prof. DU Ruxu

Faculty member



SURGICAL ROBOT CHALLENGE 2017 AT HAMLYN SYMPOSIUM ON MEDICAL ROBOTICS – BEST INNOVATION PRIZE

Dr. WANG Zerui

Research staff

Prof. LIU Yunhui

Faculty member

Project Title: Smart Autonomous Unknown Deformable Object Manipulation Using the da Vinci Research Kit



2017 INTERNATIONAL CONFERENCE ON ADVANCED ROBOTICS – BEST PAPER AWARD IN ROBOTIC CONTROL

Prof. LI Xiang

Faculty member

Mr. SU Xing

Research staff

Prof. LIU Yunhui

Faculty member



2017 IEEE INTERNATIONAL CONFERENCE ON REAL-TIME COMPUTING AND ROBOTICS - BEST STUDENT PAPER AWARD

Miss. YIP Hiu Man Tiffany

Research staff

(Supervisor: Prof. LIU Yunhui)

Paper Title: An Image-Based Uterus Positioning Interface Using ADALINE Networks for Robot-Assisted Hysterectomy

ASME BEST PAPER AWARD IN MECHANICS AND MATERIAL SYSTEMS

Prof. LIAO Wei Hsin

Faculty member

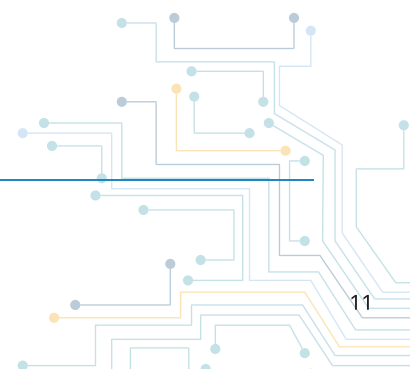
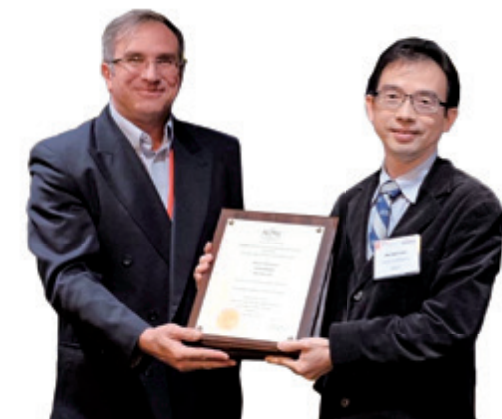
Dr. BODAGHI Mahdi

Research staff

Dr. DAMAN PAK MOGHADDAM Alireza

Research staff

Paper Title: Self-Expanding/ Shrinking Structures by 4D Printing



2017 IEEE/RSJ INTERNATIONAL CONFERENCE ON INTELLIGENT ROBOTS AND SYSTEMS (IROS) – BEST APPLICATION PAPER FINALISTS

Prof. LI Xiang Faculty member
Mr. SU Xing Research staff
Prof. LIU Yunhui Faculty member
Project Title: Cooperative Robotic Soldering of Flexible PCBs



32ND ANNUAL MEETING OF THE AMERICAN SOCIETY FOR PRECISION ENGINEERING

2ND Prize in Student Competition

Mr. LI Chenglin PhD student
Mr. WANG Dien PhD student
Miss WANG Ji PhD student
(Supervisor: Prof. CHEN Shih-Chi)

Best Oral Presentation

Prof. CHEN Shih-Chi Faculty member
Title: DMD-Based Random-Access Scanner for Fast 3D Imaging and Fabrication



FACULTY MEMBER CHO-HMING LI PROFESSORSHIP

Prof. LIU Yunhui Faculty member

CUHK YOUNG RESEARCHER AWARD 2016

Prof. LU Yi-Chun Faculty member



Prof. LIU Yunhui (left) received the honor at the 83rd Congregation for the Conferment of Degrees.

DEPARTMENT NEWS

DEPARTMENT AFFAIRS

APRIL

Department Scholarship Ceremony

The 2017 Scholarship Ceremony was held on 24 April 2017 in the Chinese University of Hong Kong. In the 2016/17 academic year, nearly 100 scholarships and awards were awarded to students from MAEG and EEEN with the total value amounting to over a HK\$1 million. The scholarships were awarded from the HKSAR Government, industrial sponsorships and the University.



MAY

EPD Visits MAE Department and EEEN Programme

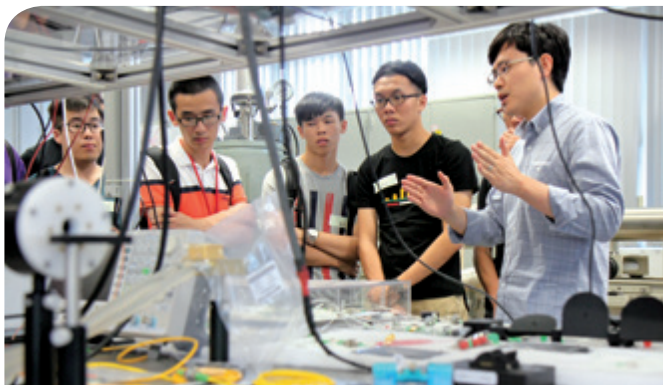
The Assistant Director of the Environmental Protection Department (EPD) of the HKSAR Government, Mr. MOK W. C., led a team from the Electric Vehicle Section to visit the Department on 4 May 2017, and held discussions with Energy and Environmental Engineering Programme (EEEN) faculty members. They were very impressed by the researches of the Department. They also expressed strong interests in collaborative works, both in the deployment of our research results and in giving guest lectures to EEEN students on government policies relating to energy and the environment.

MAY

Annual Banquet (MSc Programme)

The Annual Banquet for the part-time and full-time MSc Programme in Mechanical and Automation Engineering was held on 5 May 2017. The MSc programme aims to provide practicing engineers with the knowledge and capability to use some of the latest technical advances in Mechanical and Automation Engineering, especially related to Energy Systems.





JULY

HK PhD Fellowship Summer Workshop 2017

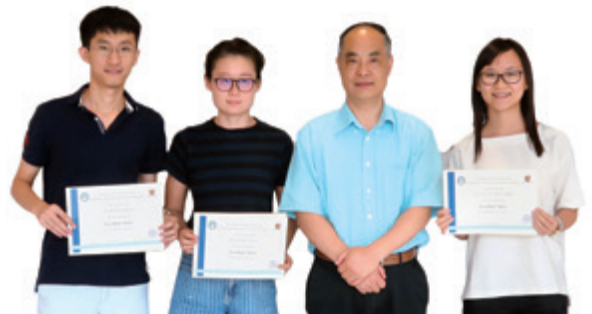
The Faculty of Engineering organized a 5-day Summer Workshop on CUHK campus for applicants who were seeking admission to PhD programmes through the Hong Kong PhD Fellowship Scheme. A total of 180 applicants were selected to participate in the Workshop. In addition to technical seminars, poster sessions and laboratory visits, workshop participants could have an opportunity to meet selected professors and attend an admission interview at the end of the Workshop.



AUGUST

Professor XU Yunjian Joins the MAE Department (Affiliated with EEEN Programme)

Professor XU Yunjian has joined the Department of Mechanical and Automation Engineering as an Assistant Professor in August 2017. He is affiliated with Energy and Environmental Engineering Programme.



AUGUST

Excellent Tutor Award Ceremony

To promote excellence in teaching at the University, the Department establishes Excellent Tutor Award to recognize the outstanding tutors for their teaching. This year, Mr. ZHONG Fang Xun (left), Miss ZHANG Tian Xue (middle left) and Miss LEUNG Yun Yee (right) received the award.

SEPTEMBER

Department Academic Advisory Gathering

To support students' academic development with pastoral care, the Department-level advisory system is set to encourage interactions between the MAE teaching members and students. Gatherings and meetings are organized under the system to provide platforms for communications. The first Department Academic Advisory Gathering in the academic year 2017-18 was held on 11 September 2017 in CUHK.





OCTOBER

Orientation Day 2017

The Department held a booth and lab tours on the Orientation Day for Undergraduate Admissions, and it attracted flocks of visitors coming to know more about the undergraduate programmes offered by the MAE Department.

NOVEMBER

Professor ZI Yunlong joins the MAE Department (Affiliated with EEEN Programme)

Professor ZI Yunlong has joined the Department of Mechanical and Automation Engineering as an Assistant Professor in November 2017. He is affiliated with Energy and Environmental Engineering Programme.

NOVEMBER

83rd Congregation - Master's Degree Graduation Ceremony - MSc MAE

The Master's Degree Graduation Ceremony of the 83rd Congregation for the Conferment of Degrees was held on 17 November 2017 in CUHK. Graduates of MSc Programme in Mechanical and Automation Engineering celebrated their graduation with the MAE Professors.



DECEMBER

Department Gathering - Christmas Party and Long Service Award Presentation

The MAE Department organized a gathering for the early Christmas party and the CUHK Staff Thankful Day on 11 December 2017. To praise the long and dedicated service of our department colleagues, the MAE Department has set up a 20-year Long Service Award, and CUHK has also set up a 15-year Long Service Award. 3 and 13 colleagues are eligible for the 20-year Long Service Award of the MAE Department and 15-year Long Service Award of the University, respectively.





FACULTY DISTINGUISHED LECTURES

4 Faculty Distinguished Lectures were organized by the Department of Mechanical and Automation Engineering in CUHK in the year 2017.

The following are the highlights from the lectures:



DATE: 9 May 2017

TITLE: Towards a Theoretical Foundation of PID Control

Prof. GUO Lei

Academician of Chinese Academy of Sciences
Director of the National Center for Mathematics and Interdisciplinary Sciences
Chinese Academy of Sciences
China



DATE: 30 Aug 2017

TITLE: Nanomachines: Designs and Applications

Prof. WANG Joseph

SAIC Endowed Chair, Distinguished Professor
Department of Nanoengineering
University of California San Diego
USA



DATE: 6 Sep 2017

TITLE: Navigating the Turbulence of the Global Energy System

Prof. MAJUMDAR Arun

Department of Mechanical Engineering
Precourt Institute for Energy
Stanford University
USA



DATE: 4 Dec 2017

TITLE: Feedback Design for MIMO Nonlinear Systems: Challenges, Roadblocks, Recent Advances

Prof. ISIDORI Alberto

Professor Emeritus
Department of Computer, Control and Management Engineering
University of Rome
Italy



SEMINARS

42 seminars were organized by the Department of Mechanical and Automation Engineering in CUHK in the year 2017.

The following are some of the highlights from the seminars:



DATE: 5 Jan 2017

TITLE: Coupling of Fluorescent Nano-Emitters with Their Optical Environment

Prof. COOLEN Laurent

Assistant Professor
Institut de NanoSciences de Paris
Université Pierre et Marie Curie - Paris 6
France



DATE: 13 Feb 2017

TITLE: Microvascular Networks in Microfluidic Systems and Their Role in Modeling Metastatic Cancer

Prof. KAMM Roger D.

Cecil and Ida Green Distinguished Professor
Department of Biological Engineering and Department of Mechanical Engineering
Massachusetts Institute of Technology
USA



DATE: 17 Mar 2017

TITLE: Output Regulation of Heterogeneous Multi-Agent Systems: Geometry and Unified Design Approach

Prof. LEWIS Frank L.

Head Advanced Controls & Sensors Group
UTA Research Institute (UTARI)
The University of Texas at Arlington
USA



DATE: 29 Mar 2017

TITLE: Routh-Type Table Test for Zero Distribution of Polynomials with Commensurate Fractional and Integer Degrees to Determine Various Dynamic Systems Stability

Prof. WANG Sheng-Guo

Professor of Electrical and Computer Engineering Technology
The William States Lee College of Engineering
University of North Carolina at Charlotte
USA



DATE: 11 Jul 2017

TITLE: Intelligent Robots That Are Inspired by Nature

Prof. HU Huosheng

Professor
School of Computer Science & Electronic Engineering
University of Essex
United Kingdom



DATE: 26 Jul 2017

TITLE: Force Feedback Technology on Surgical Robot

Prof. XIE Le

Professor
National Engineering Research Center of Die & Mold CAD
Shanghai Jiao Tong University
China

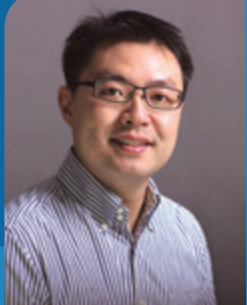


DATE: 11 Aug 2017

TITLE: Computation Design and Fabrication: From Design Automation to New Manufacturing

Prof. WANG Changling Charlie

Professor
Department of Design Engineering
Delft University of Technology
The Netherlands



DATE: 14 Aug 2017

TITLE: Introduction of Dr. Tristan Ruoli Dai and Beijing Noitom Technology Ltd.

Dr. DAI Ruoli Tristian

Partner/CTO
Noitom Technology Ltd.
China



DATE: 21 Aug 2017

TITLE: Interaction Control in Humans and with Robots

Prof. BURDET Etienne

Professor of Human Robotics
Department of Bioengineering
Imperial College of Science, Technology and Medicine
United Kingdom



DATE: 28 Aug 2017

TITLE: Data Representation in Visual Robot Navigation

Prof. ZHANG Hong

Professor
Department of Computer Science
University of Alberta
Canada



DATE: 22 Sep 2017

TITLE: AI in Human-Centered Multimedia Systems

Dr. KENNEDY Lyndon

Senior Staff Researcher
Huawei R&D
USA



DATE: 27 Sep 2017

TITLE: Development of Fully Autonomous Unmanned Aerial Systems

Prof. CHEN Benmei

Professor & Provost's Chair
Department of Electrical and Computer Engineering
National University of Singapore
Singapore



DATE: 29 Sep 2017

TITLE: Electrical Energy Storage: Next Generation Battery Technologies

Prof. MANTHIRAM Arumugam

Professor
Department of Mechanical Engineering
The University of Texas at Austin
USA



DATE: 16 Oct 2017

TITLE: Active Vibration Control Systems and Actuators

Prof. KARIMI Hamid Reza

Professor of Applied Mechanics
Department of Mechanical Engineering
Politecnico di Milano
Italy



DATE: 14 Nov 2017

TITLE: How Super Are Superoxide Batteries?

Prof. WU Yiyang

Professor
Department of Chemistry and Biochemistry
The Ohio State University
USA



DATE: 11 Dec 2017

TITLE: Engineering Graphene-Based Biomedical Technologies: from Neural Interface Devices to Therapeutic Transport Systems

Prof. KOSTARELOS Kostas

Professor
School of Medicine & National Graphene Institute
University of Manchester
United Kingdom

EXHIBITIONS



DATE: 13 - 16 Apr 2017

EVENT: International ICT Expo 2017
(Hong Kong)

Prof. CHEN Shih-Chi - 3-D Resolved Parallel Laser Machining and Metal Additive Manufacturing

Prof. REN Wei - Portable Air Pollution Monitoring System

DATE: 16 - 18 May 2017

EVENT: Medical Devices and Supplies Fair 2017
(Hong Kong)

Prof. LIAO Wei-Hsin - Powered Ankle-Foot Prosthesis

Prof. LIU Yunhui - High-Speed High-Resolution 3D Imaging System¹

¹This project was also exhibited at Global Sources Spring Electronics Show (Hong Kong) from 18 - 21 April 2017.



DATE: 18 - 20 Oct 2017

EVENT: Global Sources Autumn
Electronics Show (Hong Kong)

Prof. LAU Tat Ming Darwin - XL-Laser: Extra Large 3D Cable-Driven Laser Cutting Robot¹

Prof. GUO Ping - Structural Colouration of Metals

Prof. GUO Ping - Levitating Actuator Using Near-Field Acoustic

¹This project was also exhibited at HKIE Technovation Conference and Exhibition (Hong Kong) on 2 November 2017.



DATE: 21 - 29 Oct 2017

EVENT: InnoCarnival 2017 (Hong Kong)

MAE Students - Champion Winning Project of Greater China Design Competition

Prof. GUO Ping - Levitating Actuator Using Near-Field Acoustic



DATE: 9 Dec 2017

EVENT: TRS Public Symposium 2017 (Hong Kong)

The TRS project "Smart Solar Energy Harvesting, Storage and Utilization" participated in the symposium to exhibit the up-to-date accomplishments of the projects.

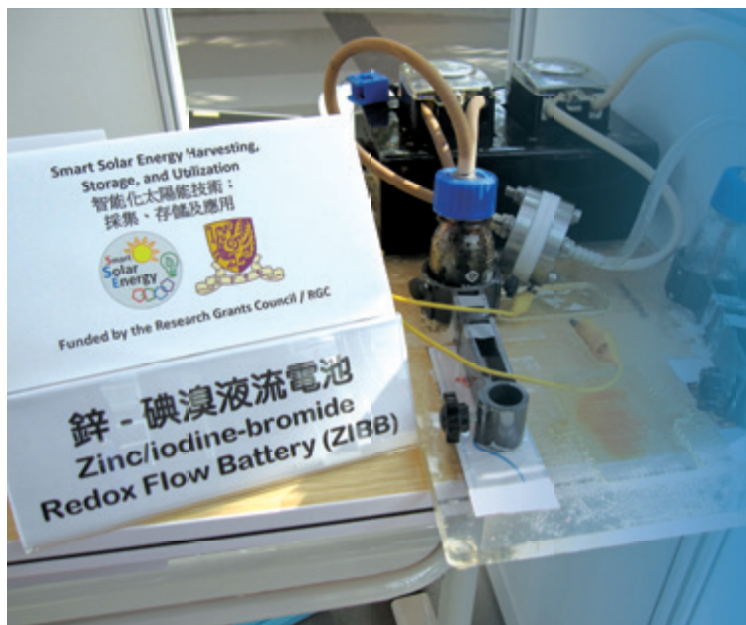
Project Exhibited:

Prof. CHEN Shih-Chi - Precision Design and Control of a Flexure-Based Multi-Layer Roll-To-Roll Printing System

Prof. XU Dongyan - Development of Thermoelectric Generators (TEGs)

Sub-project in Exhibition:

Prof. LU Yi-Chun - High-Energy-Density and Low-Cost Zinc/Iodine-Bromide Redox Flow Battery (ZIBB)

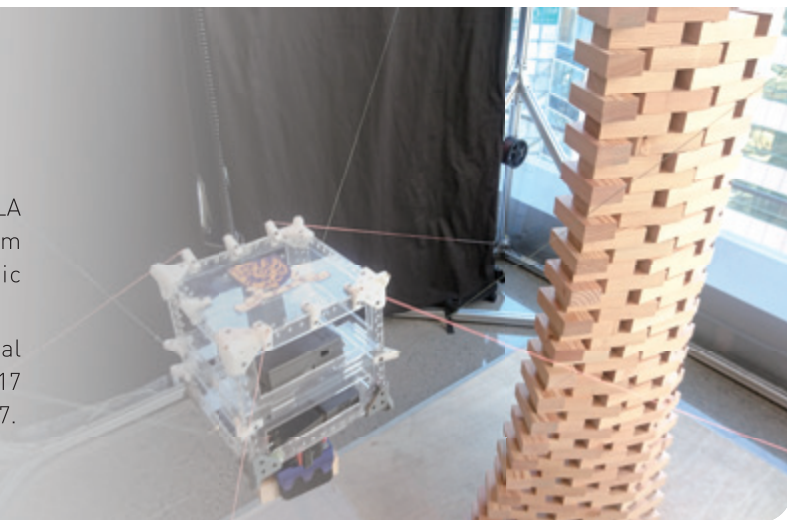


DATE: 12 Dec 2017 – 12 Feb 2018

EVENT: 2017 Hong Kong Bi-City Biennale of Urbanism\ Architecture (Hong Kong)

Prof. LAU Tat Ming Darwin, Prof. YAM Yeung, Prof. CROLLA Kristof (School of Architecture, CUHK), **Prof. FINGRUT Adam** (School of Architecture, CUHK) - CU-Brick For Robotic Architecture

This project was also exhibited at BUD Shenzhen Industrial Automation Show (Shenzhen) from 28 - 30 June 2017, and 2017 World Robotics Conference (Beijing) from 23 - 28 August 2017.



STUDENT EXCHANGE

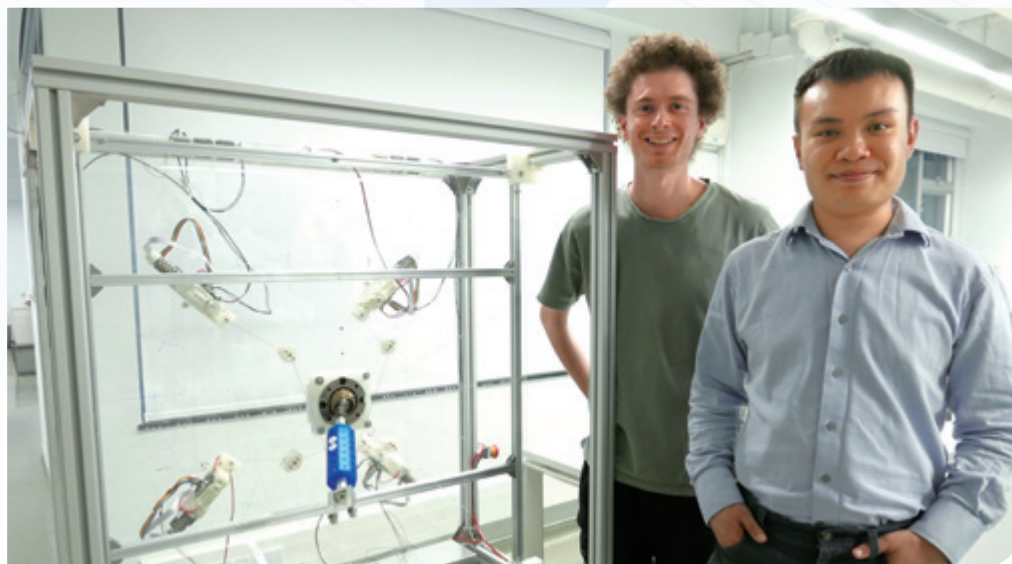
In the year 2017, a total of 47 incoming and outgoing students were sent to exchange via our Department.

Having this opportunity, both the incoming and outgoing exchange students could immerse themselves in the academic and social life of the host institution.

POSTGRADUATES

To promote the exchange in research and development of the MAE research groups, 8 graduate students were sent to exchange via our department. The following shows some highlights of the graduates who took part in the exchange programme:

INCOMING



NAME: EDEN Jonathan

UNIVERSITY: University of Melbourne, Australia

"My time at CUHK formed a critical component in the collection of experimental results for my PhD. My research was conducted within the Department of Mechanical and Automation Engineering under the supervision of Prof. Darwin LAU. I found CUHK to be a warm and friendly campus in one of the most picturesque parts in the New Territories of Hong Kong. The students of CUHK were incredibly open and inviting while providing me advice and assistance whenever possible. This made the CUHK experience incredible, memorable and enjoyable."

HIGHLIGHTS

OUTGOING



NAME: WANG Zerui

UNIVERSITY: Johns Hopkins University, USA

"Visiting Johns Hopkins University is one of the most important decisions I made during my PhD study. During the visit, I learned from one of the best research groups all over the world how to perform excellent research works. I would like to thank my PhD supervisor Prof. LIU Yunhui who gave me the chance and introduced me to the research lab at JHU. I would also express my gratitude to Prof. Russell H. TAYLOR, Prof. Peter KAZANZIDES, Mr. Anton DEGUET and others who made my visit in JHU very fruitful, enjoyable, and unforgettable. Finally, I want to thank the ORAP scholarship for the financial support during my visit."



UNDERGRADUATES

With aid of the MAE Department and the University, 20 undergraduate students from MAEG or ENER/EEEN could go to various countries including Singapore, USA and Germany for an exchange. Some of the students could also visit and study within some prestigious universities, such as University College London, National University of Singapore and Dartmouth College, via the exchange programme.

Additionally, 19 undergraduates who come from different countries including UK, Switzerland, USA and Korea joined the exchange programmes to take courses provided by MAE Department. Many of those undergraduates are from renowned universities, such as Dartmouth College and Brown University in USA, University of Rochester in UK, and McGill University in Canada.

HIGHLIGHTS - OUTGOING STUDENTS



NAME: TANG Hei Tung (MAEG)
UNIVERSITY: National University of Singapore, Singapore

PERIOD: 2016/17 2nd Term

At the second semester of 2016/2017, I was going on exchange to the National University of Singapore. Studying with students from different cultural background is fun. I had completed several group projects with students having different cultural backgrounds. Although there were communication barriers at first, with patience and thorough discussions, we were able to complete them with ease and scored the highest among all groups. The photo attached is my German course class photo. Classmates are from different parts of Southeast Asia.



NAME: TANG Kwok Wai (MAEG)
UNIVERSITY: Nanyang Technological University, Singapore

PERIOD: 2016/17 2nd Term

Joining exchange not only helps to broaden our horizon, but also helps to acquire knowledge. For major courses, I enrolled in fluid mechanics and manufacturing automation. Singapore is a country with advanced technology because of economic reform. The government promotes and provides opportunities to develop additive manufacturing as well as its application. We can join different lab tours to enhance our learning experience by implementation. For example, I saw different 3D printing machines in the laboratory and students are fascinated to show us their project. It is an efficient way to learn knowledge apart from cramming books.

COLLABORATIONS

In addition to providing excellent environment for students and research staff to perform research, faculty members and research staff from the MAE Department conduct various research projects in collaboration with different institutes and companies in order to leverage the synergy and enhance the research impact.

The following shows part of the ongoing collaboration projects which involve our department members:

FACULTY MEMBER	INSTITUTE/COMPANY IN COLLABORATION	PROJECT TITLE
Prof. CHEN Shih-Chi	Lawrence Livermore National Laboratory (USA)	Contract Research on Novel Optical Techniques to Improve Performance of Parallel Two-Photon Polymerization based Submicron Additive Manufacturing
Prof. CHEN Shih-Chi	Massachusetts Institute of Technology (MIT)	Theoretical Modeling and Development of a Microtome Optimized for Soft Tissue Cutting and 3-D Microscopic Imaging
Prof. CHEN Shih-Chi	Precision Instrument and Optics Limited; ITE Engineering Limited	Deep Learning for Next-Generation Precision Machine Tools and Manufacturing
Prof. CHEN Chun	The Boeing Company	Developing a New Nozzle for Reducing Particle Deposition in Aircraft Cabins
Prof. CHEN Yongsheng	Soon Luck Investment Limited	Developing a Durable SCR Catalytic Converter for Advanced Diesel Engines
Prof. HUANG Jie	Prof. LIU Tengfei, Northeastern University; Prof. JIANG Zhong-Ping, New York University	Nonlinear Control Methodology for Cyber-Physical Systems
Prof. HUANG Jie	Prof. CHEN Jie, Beijing Institute of Technology; Prof. XIE Lihua, Nanyang Technological University	Non-Cooperative Behavior Detection, Isolation and Repair of Land-Based Multi-Agent Systems
Prof. LAU Tat Ming Darwin	Prof. OETOMO Denny, University of Melbourne; Prof. TAN Ying, University of Melbourne	Operational Space Motion Control of Musculoskeletal Human-Like Robots
Prof. LI Xiang	Rui Chi (Shenzhen) Robot Co., Ltd.	Vision-Based Robot Systems for Automatic Soldering of Flexible PCBs and USB Wires
Prof. LI Xiang	Shenzhen Grandland Robot Co., Ltd.; Harbin Institute of Technology Shenzhen Graduate School	Enabling Technologies for Indoor Renovation Robots
Prof. LIU Yunhui	Hong Kong Air Cargo Terminals Limited; Cathay Pacific Services Limited; T Stone Group Limited	An Autonomous Tractor for Indoor Transportation Tasks
Prof. XU Yunjian	Prof. TONG Lang, Cornell University	Dynamic Electric Vehicle Charging under Random EV Arrivals and Charging Costs
Prof. XU Yunjian	Prof. XU Huan, Georgia Institute of Technology	Distributionally Robust Control

STATISTICS

SCHOLARSHIPS

In the 2016/17 academic year, nearly 100 scholarships and awards were awarded to students from MAEG and EEEN with the total value amounting to HK\$1,134,224. The scholarships were awarded from the HKSAR government, industrial sponsorships and the University.

Industrial scholarships are set up with the generous sponsorships from the following companies:

CLP Power Hong Kong Limited, Dahua Education, Dr. Robot Creative Science Limited, Hip Yick Industrial Company Limited, Hong Kong Mould and Product Technology Association (HKMPTA), Hongkong Zhuhai Commerce Association, Kin Yip (Huizhou) P.C. Board Company Limited, NTK Holdings Limited, Polywell Machinery Limited, Pro-Technic Machinery Limited, Vigor Precision Limited.

The following table shows the list of the awardees and scholarships:

HONG KONG GOVERNMENT

STUDENT NAME	NAME OF SCHOLARSHIP
JULIPALAS Evelyn	HKSAR Government Scholarships - Admission Scholarship (NLO) for 2013 Cohort Student
SHEN Zhenyu	HKSAR Government Scholarships - Admission Scholarship-Mainland
CHAN Chuen Wai	Hong Kong Scholarship for Excellence Scheme (HKSES)
CHEN Pengfei	Hong Kong PhD Fellowship Scheme (HKPFS)
FANG Shitong	Hong Kong PhD Fellowship Scheme (HKPFS)
YANG Bohan	Hong Kong PhD Fellowship Scheme (HKPFS)
YANG Ru	Hong Kong PhD Fellowship Scheme (HKPFS)

INDUSTRIAL SPONSORS

STUDENT NAME	NAME OF SCHOLARSHIP
CHAN Yau Hang	CLP Scholarship in Energy Engineering
CHEUNG Tsz Wing	CLP Scholarship in Mechanical and Automation Engineering
LAU Ngai	Dahua Education Scholarship
CHAN Yau Hang	Dr. Robot Creative Science Limited Scholarship
NG Wee Shen	Hip Yick Scholarship
CHEUNG Kwok Chiu	HKMPTA Scholarship
KWOK Tung Lam	HKMPTA Scholarship
KONG Shuk Wai	Hongkong Zhuhai Commerce Association Scholarship
CHEUNG Tsz Wing	Hongkong Zhuhai Commerce Association Scholarship
KIMAN Malvin	Kin Yip Scholarship
DAI Ho Kam	NTK Scholarship
CHEN Zhihong	Polywell Scholarship

STUDENT NAME	NAME OF SCHOLARSHIP
LIU Ziyue	Polywell Scholarship
LAI Kwok Wai	Pro-Technic Scholarship
HO Wing Hang	Pro-Technic Scholarship
YU Yat San	Vigor Precision Limited Scholarship
SHEN Ting-Feng	Vigor Precision Limited Scholarship

HIGHLIGHTS

Mr. CHAN Chuen Wai, a graduate from the Department of Mechanical and Automation Engineering, has been awarded the Hong Kong Scholarship for Excellence Scheme (HKSES) by the Education Bureau. The HKSES aims to support local students to pursue studies in world renowned universities outside Hong Kong, with a view to grooming a top cadre of talents with global vision, international network and world-class education, thereby contributing to enhancing Hong Kong's competitiveness as Asia's world city in a globalised knowledge economy.

Mr. CHAN is now studying MSc Programme in Sustainable Energy at Imperial College London.

With the generous sponsorships and support from the following industrial companies, industrial scholarships are set up. Awardees received their industrial scholarships from the representatives of industrial sponsors on 24 April 2017.



Group photo of the representatives of industrial sponsors



Group photo of the industrial sponsor representatives with awardees

GRANTS

A total of HK\$145,560,494 (HK\$145 million) of grant funding was successfully applied and received by faculty members of MAE Department in year 2017. The grants commenced in 2017 include the grants from Research Grant Council (RGC), Innovation and Technology Fund (ITF) from the Innovation and Technology Commission of HKSAR, and grants from other industrial companies, Mainland organizations and foreign

institutes. For RGC grants and ITF grants, a total amount of HK \$6,426,718 and HK\$20,403,069 were received by faculty members respectively in 2017. For the grants from other industrial companies, Mainland organizations and foreign institutes, a total of HK \$113,184,198 of grant funding was successfully applied and received in 2017.

RGC GRANTS (NEW IN 2017)

PRINCIPAL INVESTIGATOR	PROJECT TITLE	GRANT PERIOD	PROJECT AMOUNT (HK\$)
BIAN Liming	Bio-Inspired Fast-Gelation Bioadhesive Hydrogels for Biomedical Engineering Applications	2017-2019	\$482,605
CHEN Shih-Chi	Ultrafast Laser Scanning and Beam Shaping for Two-Photon Microscopy Based on Binary Holography	2017-2020	\$582,000
DU Ruxu	A New Method for Incremental Sheet Metal Forming Based on Minimum Energy Principle and Model-Less Control	2017-2019	\$452,666
GUO Ping	Electrically Enhanced Stamping Process for Ultrafast Generation of Micro-Structured Surfaces	2017-2019	\$810,588
HUANG Jie	A Framework for Distributed Control of Discrete-Time Multi-Agent Systems	2017-2020	\$875,000
LAU Tat Ming Darwin	Operational Space Motion Control of Musculoskeletal Human-Like Robots	2017-2020	\$807,960
LIAO Wei-Hsin	Design and Modeling of Impact-Excited Bistable Energy Harvesters	2017-2020	\$582,000
REN Wei	Pyrolysis Study of Long-Chain Methyl Esters in an Aerosol Shock Tube Using Laser Absorption Diagnostics	2017-2019	\$675,647
XU Dongyan	Self-Assembled Metal Phthalocyanines (MPc) Nanoribbons as Promising Organic Thermoelectric Materials	2017-2019	\$675,647
ZHANG Li	Development of In Vivo Trackable Biohybrid Medical Microrobots via Natural Fluorescence and Quantum Dots Endocytosis	2017-2019	\$482,605

ITF GRANTS (NEW IN 2017)

PRINCIPAL INVESTIGATOR	PROJECT TITLE	GRANT PERIOD	PROJECT AMOUNT (HK\$)
CHEN Shih-Chi	Trial: Ultrafast Two-Photon 3D Microscope	2017-2019	\$1,993,697.50
CHEN Shih-Chi	Deep Learning for Next-Generation Precision Machine Tools and Manufacturing	2017-2019	\$4,014,350.00
CHEN Yongsheng	Developing a Durable SCR Catalytic Converter for Advanced Diesel Engines	2017-2018	\$1,391,146.00
LI Xiang	Enabling Technologies for Indoor Renovation Robots	2017-2019	\$1,796,300.00
LI Xiang	Vision-Based Robot Systems for Automatic Soldering of Flexible PCBs and USB Wires	2017-2019	\$1,368,200.00
LIU Yunhui	An Autonomous Tractor for Indoor Transportation Tasks	2017-2019	\$9,839,376.00

The following table shows the summary of the ongoing RGC and ITF grants in 2017:

RGC GRANTS (ON-GOING)

PRINCIPAL INVESTIGATOR	PROJECT TITLE	GRANT PERIOD
BIAN Liming	Development of Injectable Hydrogels via a "Guest-Host Macromer" Approach for Biomedical Engineering Applications	2016-2018
CHEN Shih-Chi	Sub-Diffraction Limit Parallel Manufacturing Based on Ultrashort Pulse Lasers	2015-2018

CHEN Shih-Chi	Theoretical Modeling and Development of a Microtome Optimized for Soft Tissue Cutting and 3-D Microscopic Imaging	2015-2017
HUANG Jie	The Certainty Equivalence Principle and the Cooperative Control of Networked Systems with its Applications	2016-2019
HUANG Jie	Cooperative Global Stabilization of Nonlinear Uncertain Multi-Agent Systems by Switched Feedback Control and its Applications	2015-2019
HUANG Jie	Leader Following with Connectivity Preservation of Multi-Agent Systems by Distributed Observer Based Approach	2014-2018
HUANG Jie	A Framework for Cooperative Global Output Regulation of Nonlinear Uncertain Multi-Agent Systems	2014-2017
LIAO Wei-Hsin	3D Printing with Shape Memory Materials for Self-Folding/Unfolding Adaptive Structures	2016-2019
LIAO Wei-Hsin	Control of a Robotic Assistive Knee Brace towards Neurologic and Orthopedic Rehabilitation	2016-2018
LIAO Wei-Hsin	Biomechanical Energy Harvesters with Electromechanical Transduction	2015-2017
LIAO Wei-Hsin	Hierarchical GPU-Based Solid Modeling for Freeform Polyhedral Objects	2015-2017
LIU Yunhui	Visually Servoed Flying Control of Aerial Robots without Using Global Positioning Systems	2015-2018
LIU Yunhui	Visually Servoed Formation Control of Nonholonomic Mobile Robots	2013-2017
LU Yi-Chun	Probing the Working Mechanism of Peroxide Oxidation Catalysis in Lithium-Oxygen Batteries	2016-2018
LU Yi-Chun	Elucidating the Design Principles of Carbide/Nitride-Based Lithium-Oxygen Electrodes: From Model Electrodes to Battery Application	2015-2017
REN Wei	A Compact and Ultra-Sensitive Photoacoustic Gas Sensor with Cavity and Quartz Enhancement	2016-2018
XU Dongyan	Exploring Boiling Heat Transfer Limits with Microstructured Hydrophilic-Hydrophobic Surfaces	2014-2017
YUAN Haidong	Reachable Sets for Coherently Controlled Quantum Systems	2013-2017
ZHANG Li	A Swarm of Magnetic Nanoparticle-Based Helical Swimming Microrobots for Targeted Therapeutic Interventions In Vivo	2016-2018
ZHANG Li	Biotemplate Synthesis of Magnetic Helical Microrobots for On-Demand Drug Delivery with High Loading Capacity and Sustained Release	2015-2018
ZHANG Li	Helical Swimming Microrobots for Electrical Stimulation of Biological Cells with Subcellular Resolution	2014-2017

ITF GRANTS (ON-GOING)

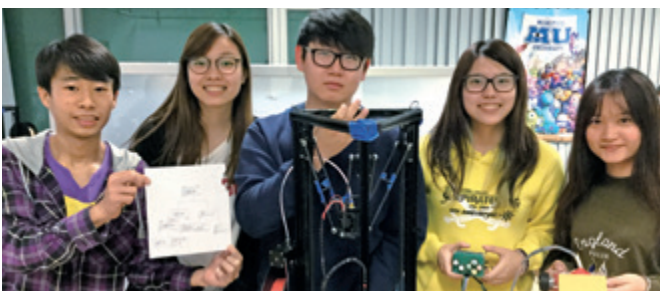
PRINCIPAL INVESTIGATOR	PROJECT TITLE	GRANT PERIOD
CHEN Shih-Chi	Development of a High-Speed Stealth Laser Dicing System Based on Multi-Depth Bessel Beams	2016-2018
CHEN Shih-Chi	Precision 3-D Resolved Parallel Laser Machining and Metal Additive Manufacturing	2015-2017
GUO Ping	3D-Freeform Micro-Sculpturing Using Non-Resonant Elliptical Vibration Texturing	2016-2017
LIU Yunhui	A New Robot Assisting Nasal Surgical Procedures with Natural Interface and its Clinical Trials	2015-2018
LIU Yunhui	A Robotic Assistant for Manipulating Uterus in Hysterectomy	2015-2017
LU Yi-Chun	Integrated Thermal Energy Harvesting and Storage for Autonomous Wireless Sensor Network	2015-2019
REN Wei	Development of a Low-Cost and Ultra-Sensitive Urea Breath Analyzer for the Detection of Helicobacter Pylori Infection	2016-2018
REN Wei	Development of Ultra-Sensitive, Wide-Dynamic-Range and Portable Gas Sensing System for Air Pollution Monitoring	2015-2017
ZHANG Li	MagDisk: A PnP Electromagnetic System for Three-Dimensional Robotic Micromanipulation	2016-2018

UNDERGRADUATE NEWS



3D PRINTING INTEREST GROUP (3D PIG)

3D Printing Interest Group, 3D PIG is a student society supported by the MAE Department. The group organizes numerous events related to 3D printing every year, including RC Car competition, DIY printer competition and prototyping projects. The aim of 3D Printing Interest Group is to promote 3D printing in undergraduate study. The group encourages students making use of 3D printing in their projects. During the events organized by the group, students can learn the practical skills of using 3D printer as well as having a foundation knowledge of modeling with 3D printing.



DATE: 13 Apr 2017

Useless Robot Competition

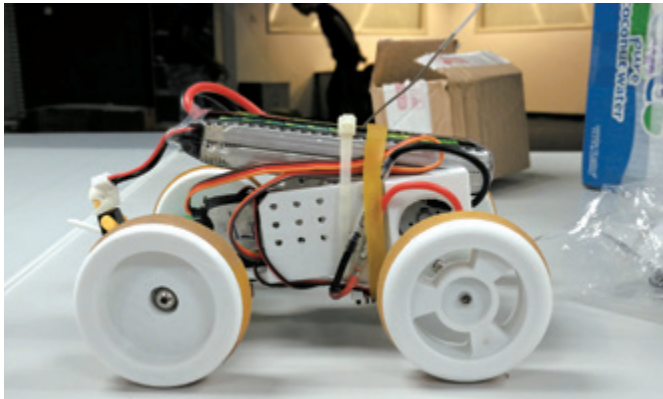
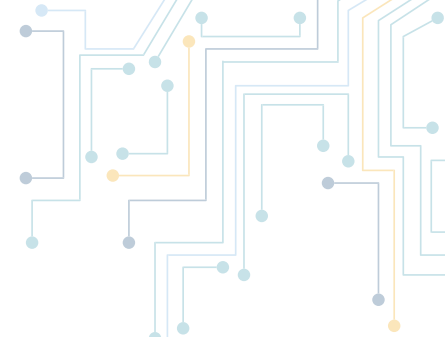
3DPiG held a competition called "Useless Robot Competition" for undergraduates in April 2017. Participants designed their 3D-printed cars and used them to battle with other teams. After rounds and rounds of battles, the winning team won the first place and received a trophy and prizes.

DATE: 3-16 Oct 2017

CAD Workshop – Teaching Students to Use Solidworks

3D PIG coordinated a CAD workshop to teach the interested to use the software – Solidwork, which is a common solid modeling computer-aided design (CAD) and computer-aided engineering (CAE) computer programme. 3D PIG conducted the workshop with four sessions: 3, 9, 11 and 16 October in the MAE common lab.





DATE: 3 Nov 2017

3D PIG RC MOTOR CAR COMPETITION

3D PIG RC motor car competition is an event that allows participants to build an RC car by using 3D printing materials. During the competition, participants can learn how to draw and print a CAD model which is used as the mechanical components of their RC car. Finally, participants took part in a racing match in the reading room in Ho Sin-Hang Engineering Building.

SOCIETY OF ENERGY AND ENVIRONMENTAL ENGINEERING / ENERGY ENGINEERING PROGRAMME - ENERWAY

ENERWAY is cabinet of the society of the Programme of Energy and Environmental Engineering (EEEN)/Energy Engineering (ENER) (2017-2018 session). During this year, the society has organized various activities for the EEEN and ENER undergraduates to participate.



DATE: 17 Jan 2017

Spring Festival Dinner Gathering 2017

The Spring Festival dinner gathering was held in Chung Chi Staff Club in the Chinese University of Hong Kong. The EEEN/ENER undergraduates had a nice evening with Prof. YAM Yeung, the Programme Director, and other professors.

DATE: 6 Feb 2017

Inauguration Ceremony

The Inauguration Ceremony of the 3rd Society of the Programme of EEEN/ENER, Session 2017-2018, was held in TY Wong Hall in Ho Sin-Hang Engineering Building. Under the witness of guests and participants, the society chop was successfully handed over to the Chairperson of the new cabinet, Miss CHAN Yau Hang, after making the vows.



DATE: 4 Apr 2017

Photo Day

The society decorated a booth for the class of 2017 of the ENER undergraduates to celebrate their first step before graduation. With the non-alcohol champagne and party poppers, the Programme Director and the society gave the graduates-to-be the best wishes for their next adventure.



SOCIETY OF MECHANICAL AND AUTOMATION ENGINEERING – MECHUP

Mechup is cabinet of the society of the Programme of Mechanical and Automation Engineering (MAEG) (2017-2018 session). During this year, the society has organized various activities for the MAEG undergraduates to participate.



DATE: 15 Feb 2017 Inauguration Ceremony

The Inauguration Ceremony of the 11th Society of the Programme of MAEG, Session 2017-2018, was held in TY Wong Hall in Ho Sin-Hang Engineering Building. The preceding and succeeding members of the society were present, the society chop was successfully handed over to the Chairperson of the new cabinet, Mr. LAO Chi Hang, under the witness of all guests and participants.



DATE: 20 Feb 2017 Spring Festival Dinner Gathering 2017

The Spring Festival dinner gathering was held at the NA Staff Canteen. With lucky draws and delicious Chinese cuisine, the MAEG undergraduates had a nice evening with Prof. HUANG Jie, the Department Chairman, and other teaching members.



DATE: 3 Mar – 7 Apr 2017 Photo Day

The society decorated booths for the class of 2017 of the MAEG undergraduates to celebrate their first step before graduation. With the non-alcohol champagne and party poppers, the Professors and the society gave the graduates-to-be the best wishes for their future.



ALUMNI NEWS



DATE: 21 Jan 2017

Engineering Mentorship Programme 2017

In collaboration with the Engineering Alumni Association of the Chinese University of Hong Kong (ERGAA), the Alumni Association of the Mechanical and Automation Engineering (MAEAA) organized the Engineering Mentorship Programme 2017 in order to provide a platform for mentees and mentors to widen their social network. The opening ceremony was held in the TY Wong Hall in Ho Sin-Hang Engineering Building.





DATE: 18 Mar 2017

Faculty of Engineering 25th Anniversary Celebration Distinguished Alumni Award

The Faculty of Engineering of the Chinese University of Hong Kong (CUHK) honoured 25 Distinguished Alumni and the presentation ceremony was conducted on 18 March 2017. This year, five of the Distinguished Alumni are the alumni from the Department of the Mechanical and Automation Engineering, the achievements in their professional fields they have made create a remarkable impact on the University and society:



Dr. DAI Ruoli Tristan - Co-Founder and Chief Technology Officer, Noitom Ltd.

For his contribution to motion capturing technology and leadership in the relevant industries



Dr. LAM Hiu Fung Alan - Chief Executive Officer, Sengital Limited

For his contribution to the innovation and technology industry and to entrepreneurship education



Prof. SUN Dong - Chair Professor and Head, Department of Mechanical and Biomedical Engineering, City University of Hong Kong, Hong Kong

For his contribution to robot-aided manipulation of biological cells



Prof. WONG Pak Kin - Professor of Biomedical Engineering, Mechanical Engineering and Surgery, Department of Biomedical Engineering, The Pennsylvania State University, USA

For his contribution to engineering research and education in translational laboratory science and technology for life sciences and medicine



Prof. WONG Tak Sing - Assistant Professor of Mechanical Engineering, Wormley Family Early Career Professor in Engineering, Department of Mechanical and Nuclear Engineering, The Pennsylvania State University, USA

For his contribution to the field of biologically inspired surface nanoengineering

DATE: 9 Aug 2017

Formation of New MAEAA Committee

The new committee of the MAEAA (2017-2019) was formed with the following committee members (undergraduate graduation year is indicated in the bracket below):

Core Committee:

President: LAU Kam Tak Kent (graduate in 2004)
 Vice President: LEUNG Kin Pong Johnny (graduate in 2004)
 Treasury: LAM Tak Lung Frank (graduate in 2006)
 Secretary: YAN Tsz Tung Hidy (graduate in 2014)
 Immediate Past President: LAM Hiu Fung Alan (graduate in 1999)

Committee Members: (in alphabetical order)

- 1) CHAN Ho Man Rosa (graduate in 2003)
- 2) CHOW Wing Yin Winnie (graduate in 2006)
- 3) CHU Ki Sum (graduate in 2015)
- 4) HUI Wai Yip Thomas (graduate in 2001)
- 5) KWOK Ki Fung (graduate in 2015)



- 6) LI Cheuk Hang James (graduate in 2004)
- 7) NG Shue Hung Sean (graduate in 2017)
- 8) WONG Chi Yin Joe (graduate in 2004)
- 9) YAU Lap Man Ada (graduate in 2009)



DATE: 6 Sep 2017

Distinguished Alumnus in the CUHK Features

The story of Prof. WONG Tak Sing, one of the 25 Distinguished Alumni by CUHK's Faculty of Engineering, was published on the CUHK Features in September with the title "Nature to Nanotech - WONG Tak Sing imitates nature to give flesh to the future". For those who are interested, please visit http://www.cuhk.edu.hk/english/features/wong_tak_sing.html to read the story of Prof. Wong.



DATE: 25 Nov 2017

Book Launch of "CUHK Engineering DreamCatchers" Coordinated by the Distinguished Alumnus of MAE

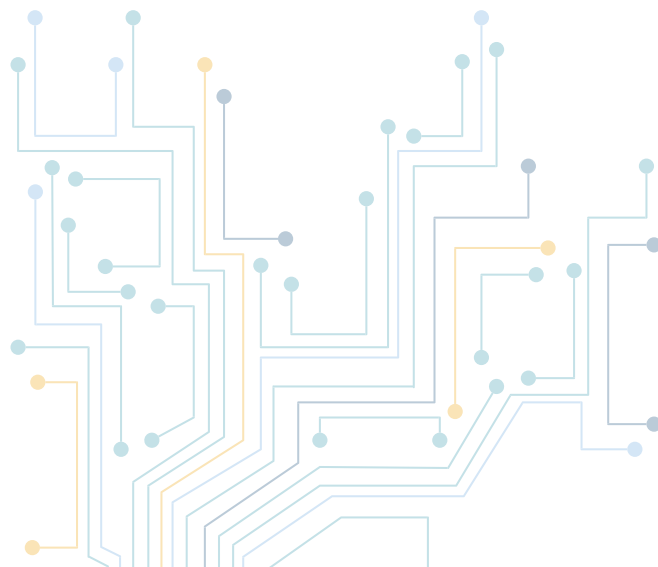
The publication of "CUHK Engineering DreamCatchers" is coordinated by Dr. LAM Hiu Fung Alan, MAE's Faculty Distinguished Alumnus. The book aims at increasing youngsters' understanding of the role of engineering in making the world a better place, and spreading words of wisdom from the 25 CUHK distinguished engineering alumni. Dr. LAM spent over a half year interviewing the alumni to write the stories which lie behind their achievements. The pre-order of the collection has been started from 25 November 2017, with a public book launch in TY Wong Hall in Ho Sin-hang Engineering Building.



DATE: 25 Nov 2017

Alumni Homecoming Day 2017

The annual CUHK Alumni Homecoming Day was held on 25 November 2017, with numerous visitors and alumni joining the event. This year, the MAEAA set up a booth and organized some booth games for visitors to play.



SHARING FROM RECENT ALUMNI



NAME: KWAN Lok Bond
(2016 graduate, BEng Mechanical and Automation Engineering)

COMPANY: Airport Authority Hong Kong

POSITION: Graduate Engineer (2-year program)

Attracted by its unique working environment and upcoming infrastructure projects, I joined Airport Authority Hong Kong (AA) as a Graduate Engineer after completing my Mechanical & Automation Engineering (MAE) bachelor degree in 2016.

Throughout the 2-year Scheme "A" training program with AA, I was involved in various Hong Kong International Airport development and maintenance works, enriching both my technical knowledge and project management skills as a foundation for becoming a professional engineer in the future.

With all the unique systems such as Baggage Handling System, Automated People Mover and Aircraft Loading Bridges, AA provides an excellent environment for MAE graduates to pursue a career relating to their studies. With that being said, I am truly grateful to be part of this company.

NAME: YEUNG Chi Ling Greta
(2016 graduate, BEng Mechanical and Automation Engineering)

COMPANY: The Jardine Engineering Corporation, Limited

POSITION: Management Trainee

As an MT in JEC, I rotate to different departments throughout the 2-year HKIE Scheme A program to explore as much as I can. We provide contracted engineering and building services, and source of specialist products. Apart from participating in normal business units, I also had chance in organizing different events, such as:

1. being the team captain of JEC team in Central Rat Race;
 2. being the master of ceremony of an annual Speaker Luncheon;
 3. being the core committee to supervise the development of 2 company's mobile applications;
 4. being the committee of Outstanding Engineering Project Awards, spring dinner, and Christmas party, etc.
- JEC provides many opportunities to cultivate MTs to be an all-rounded engineers.



Dec-2017: SCMP Interview on J-Easy and J-Toolbox, the two company-own mobile apps (Left three: Greta Yeung)



NAME: CAI Yaojun
(2017 graduate, BEng Energy Engineering)

COMPANY: Nestlé Hong Kong Limited

POSITION: Technical Trainee

I joined the company as a technical trainee after graduation. The position starts from a one-year training program aiming to equip me with the knowledge and skills to improve the production process and systems for the company. During the first year, I will rotate in different departments to learn about mechanism, methodologies and standards of the mechanical and electrical equipment in the production lines, and conduct projects with different scales in parallel.

Currently, I am working on the clean-in-place (CIP) system of one department, trying to reduce the program time and chemical usage of the cleaning procedure. I am responsible for designing the program and coordinating the project.

DEPARTMENT MEMBERS

ACADEMIC STAFF

FACULTY MEMBER

Professor AU Kwok Wai Samuel	Associate Professor
Professor BIAN Liming *	Assistant Professor
Professor CHEN Chun	Assistant Professor
Professor CHEN Shih-Chi	Associate Professor
Professor CHEN Yongsheng	Associate Professor
Professor DU Ruxu	Professor
Professor GUO Ping	Assistant Professor
Dr. HAN Dongkun	Lecturer
Professor HUANG Jie	Choh-Ming Li Professor of Mechanical and Automation Engineering, Chairman
Professor LAU Tat Ming Darwin	Assistant Professor
Professor LI Xiang	Research Assistant Professor
Dr. LI Yi-Yang	Senior Lecturer
Professor LIAO Wei-Hsin	Professor
Professor LIU Yun-Hui	Choh-Ming Li Professor of Mechanical and Automation Engineering
Professor LU Yi-Chun	Assistant Professor
Professor NAVARRO-ALARCON David *	Research Assistant Professor
Professor REN Wei	Assistant Professor
Professor XU Dongyan	Associate Professor
Professor XU Yangsheng	Professor of Automation and Computer-Aided Engineering
Professor XU Yunjian	Assistant Professor
Professor YAM Yeung	Professor
Professor YUAN Haidong	Assistant Professor
Dr. ZENG Fan *	Lecturer
Professor ZHANG Li	Associate Professor
Professor ZI Yunlong	Assistant Professor

* Prof. BIAN and Prof. NAVARRO-ALARCON have left the Department since July 2017.
Dr. ZENG has left the Department since June 2017.

PROFESSOR (BY COURTESY)

Professor LI Quan	Professor (by courtesy)
Professor WONG Ching Ping	Professor (by courtesy), Dean of Faculty of Engineering
Professor XIAO Xudong	Professor (by courtesy)
Professor ZHAO Ni	Associate Professor (by courtesy)

ADJUNCT PROFESSOR

Professor CHUNG Chi-Kit Ronald	Adjunct Professor
Professor KWONG Chung Ping	Adjunct Professor

NEW FACULTY MEMBERS TO JOIN MAE DEPARTMENT IN THE FUTURE (AS IN MARCH 2018)

Prof. CHEN Benmei	Professor Department of Electrical and Computer Engineering The National University of Singapore, Singapore
Prof. WANG Changling	Professor Department of Design Engineering Delft University of Technology, The Netherlands
Prof. ZHANG Hong	Professor Department of Computing Science, Faculty of Science University of Alberta, Canada
Dr. WANG Zerui	Postdoctoral Fellow Department of Mechanical and Automation Engineering The Chinese University of Hong Kong, Hong Kong

SUPPORTING STAFF

COMPUTING / ENGINEERING STAFF

Mr. LAU Chun Hung Thomas	Assistant Computer Officer
Ms. CHAN Yuk Kuen	Computer Technician
Ms. DJIN Kie Karina	Computer Technician
Mr. MOK Wai Kit Allan	Electronic Officer
Mr. CHEUK Chi Ming	Technician
Mr. LEE Yuk Keung Philip	Technician
Mr. LEUNG Yun Yee Martin	Technician
Dr. TONG Hang	Technician

ADMINISTRATIVE STAFF

Ms. KAN Yuet Lin	Executive Assistant
Ms. CHAN Miu Ling Maggie	General Clerk
Miss FUNG Ka Yin Kay	General Clerk
Ms. WONG Mei Ha Joyce	General Clerk
Miss WONG Fung Kuen Winnie	General Clerk
Miss AU Ho Ling June	Project Coordinator
Ms. MOK Siu Ping Connie	Project Coordinator
Miss WOO Cheuk Hang Joann	Project Coordinator
Mr. CHEW Chi Kin Paul	Office Assistant

SCHOLARSHIP DONOR COMPANIES (IN ALPHABETICAL ORDER)

CLP Power Hong Kong Limited	Kin Yip (Huizhou) P.C. Board Company Limited
Dahua Education	NTK Holdings Limited
Dr. Robot Creative Science Limited	Polywell Machinery Limited
Hip Yick Industrial Company Limited	Pro-Technic Machinery Limited
Hong Kong Mould and Product Technology Association (HKMPTA)	Vigor Precision Limited
Hongkong Zhuhai Commerce Association	

ADVISORY COMMITTEE

CHAIRMAN

Mr. CHAN Siu Hung, JP
Managing Director - China
CLP Holdings Ltd.

MEMBER

Ir. CHANG Che Son
Chairman and Director
Key Direction Limited

Ms. CHIANG Maria L. L.
Managing Director
Chen Chien Holdings Ltd.

Mr. CHU Weiman
Managing Director
Leeport Tools Ltd.

Mr. IP Simon P. S.
Director
NTK Technologies (HK) Limited

Mr. LAI Robert K. T.
Managing Director
Pro-Technic Machinery Ltd.

Dr. LEUNG Raymond S. H.
Chairman of FiMax Technology Limited
Chairman & CEO of Altai Technologies Limited

Mr. POON Joseph

Mr. WONG Herman S. K.
Chairman
Kin Yip Group

Mr. WONG Yam Mo
Chief Technical Officer
ASM Pacific Technology Ltd.

Prof. XIE Lihua
Professor
School of Electrical and Electronic Engineering
Nanyang Technological University

Ir. Dr. LAM Alan Hiu Fung
CEO
Sengital Limited

EX-OFFICIO MEMBER

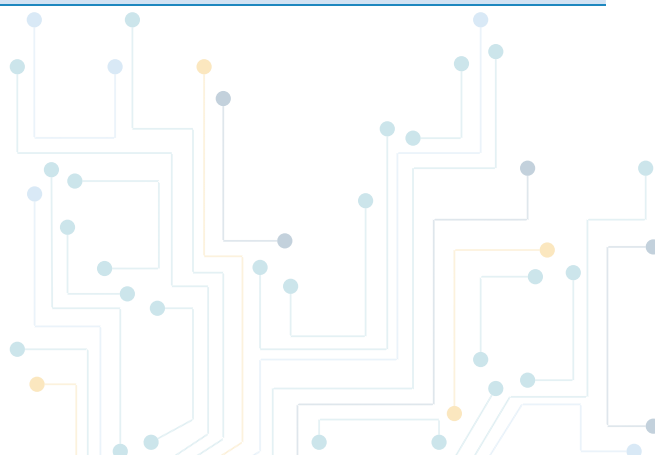
Prof. WONG Ching Ping
Dean
Faculty of Engineering
The Chinese University of Hong Kong

Prof. HUANG Jie
Chairman
Department of Mechanical and Automation Engineering
The Chinese University of Hong Kong

Prof. XU Dongyan
Associate Professor
Department of Mechanical and Automation Engineering
The Chinese University of Hong Kong

SECRETARY

Prof. DU Ruxu
Chairman
Industrial Relationship Committee
c/o Department of Mechanical and Automation Engineering
The Chinese University of Hong Kong





Department of Mechanical and Automation Engineering
Room 213, William M.W. Mong Engineering Building
The Chinese University of Hong Kong
Shatin, N.T., Hong Kong

Tel: 3943 8337

Fax: 2603 6002

Email: dept@mae.cuhk.edu.hk

Website: www.mae.cuhk.edu.hk

Facebook: <https://www.facebook.com/MAE.CUHK>

Website



Facebook



Copyright© Department of Mechanical and Automation Engineering,
The Chinese University of Hong Kong 2018.
All rights reserved.

No part of this publication may be reproduced or transmitted in any form without written permission from the publisher.