



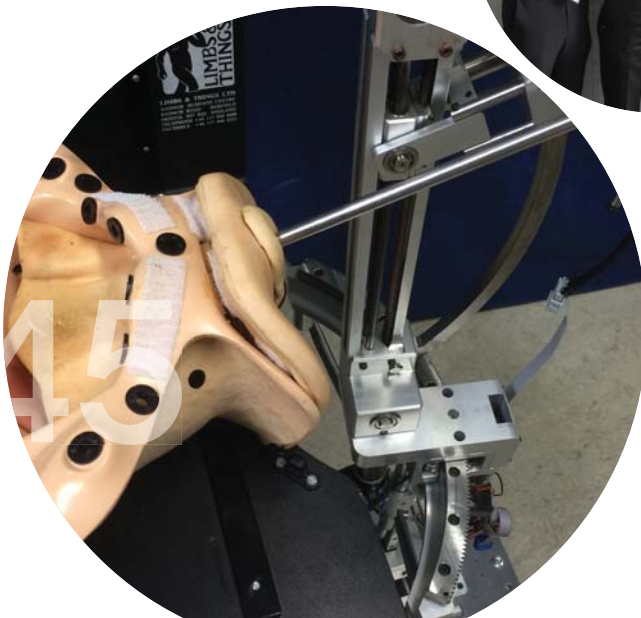
香港中文大學
The Chinese University of Hong Kong

Department of Mechanical and Automation Engineering



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Message from the Vice-Chancellor

It is with the greatest pleasure that I write in the souvenir publication of the Department of Mechanical and Automation Engineering of The Chinese University of Hong Kong, and to extend my warm greetings to its Chairman, faculty, students and alumni on the happy occasion of the Department's 20th anniversary.

Over the past two decades, the Department has served Hong Kong and the international academic community very well indeed through the excellent performance of its graduates in careers and professions where their training and talent are called for, and in high quality

research which have born rich results and led to valuable discoveries and inventions. The genius and hard work of the academics and students of the Department of Mechanical and Automation Engineering have also played a significant part in equipping businesses and industries in Hong Kong to meet the challenges of new advancements in modernization and automation worldwide.

May I take the opportunity here to reiterate my warm congratulations to the MAE Department, and my best wishes for many more years of glorious success and achievements.



Professor Joseph J. Y. Sung
*Vice-Chancellor and President
The Chinese University of Hong Kong*

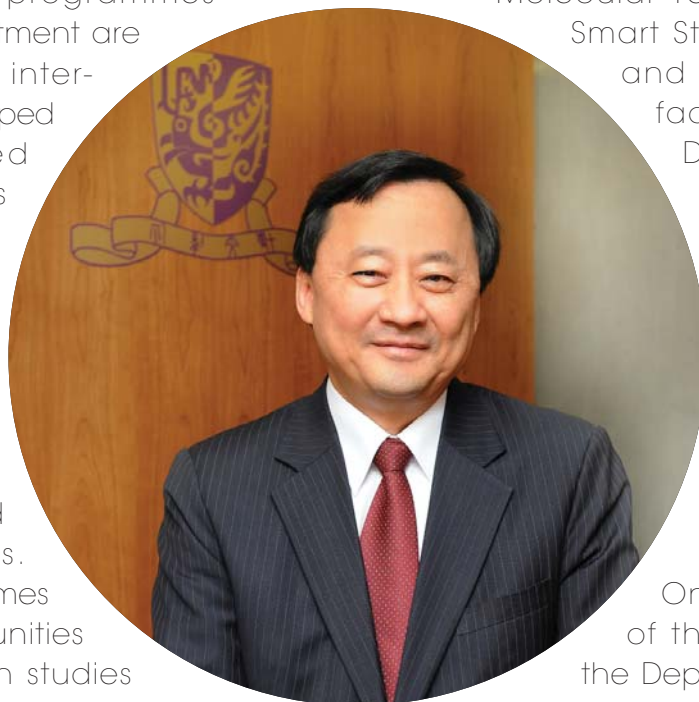
Message from the Provost

Congratulations on an incredible 20 years! Since its establishment in 1994, the Department of Mechanical and Automation Engineering (MAE) at The Chinese University of Hong Kong has matured over 1,600 undergraduate and postgraduate students. I extend my warmest congratulations on the Department's success in academia, industries, and the community.

The undergraduate programmes offered by MAE Department are comprehensive and interdisciplinary ones. Equipped with a broad-based education, graduates from the Department will have the flexibility and adaptability to perform and excel in the face of uncertainties and challenges ahead with innovative and problem-solving skills. The research programmes offer students opportunities to engage in in-depth studies and focus on research in selected areas whilst the MSc programme aims at specifically addressing the latest technical developments in MAE. Over the years, MAE graduates have become outstanding scholars, professionals and entrepreneurs in educational or technological fields. The Department has truly made a remarkable achievement in nurturing the new generation of talents and leaders.

Faculty members are enthusiastic about teaching and research. In addition to providing high quality teaching, the Department has attained international excellence in both fundamental and applied research with a broad coverage of expertise on Biomedical Engineering; CAD/CAM; Design and Advanced Manufacturing; Energy; Intelligent Systems; MEMS/Nano Molecular Technologies; Robotics; Smart Structures; and Systems and Control. Many of the faculty members in MAE Department have established themselves as world-class scholars. It is commendable that MAE students and colleagues have consistently received prestigious regional, national, and international awards.

On this joyous occasion of the 20th Anniversary of the Department of Mechanical and Automation Engineering, I congratulate again the Chairperson and his team on their achievements and sincerely wish them continued success in the years to come.



Professor Benjamin W. Wah
Provost

*Wei Lun Professor of Computer Science
and Engineering
The Chinese University of Hong Kong*



Message from the Faculty Dean

May I extend my heartiest congratulations to the Department of Mechanical and Automation Engineering of its 20th anniversary.

Engineering is vital to the sustainable growth of our economy and society. The invention of energy systems, or even engines, improves human endeavors. Engineers have devoted significant efforts to invent and develop technologies by integrating scientific and engineering principles.

With increasing needs of technological innovations in the modern world, the importance of engineering education is greater than ever before. High-calibre engineers are necessary to the long-term growth and development of the whole world.

The Department of Mechanical and Automation Engineering was established in 1994. It has provided quality education and nurtured many outstanding students and researchers in the areas of CAD/CAM, computer vision, control, design and optimization, energy, manufacturing, MEMS and NANO systems etc. The professional knowledge and skills can enhance the competence of our graduates and bring outstanding research outcomes to Hong Kong.



I am pleased to see now MAE Department is making significant contributions to the society. I am confident that the Department can continue its good works through smarted efforts of all its professors, staff and students to train up our future engineers with zeals and zest.

Professor Wong Ching Ping
*Dean
Faculty of Engineering
The Chinese University of Hong Kong*

Message from

the Chairman of the Advisory Committee on Mechanical and Automation Engineering

As the Department of Mechanical and Automation Engineering (MAE) celebrates its 20th anniversary this year, I would like to take this opportunity to congratulate the school for its outstanding academic achievements over the past two decades. As an interdisciplinary programme that combines mechanics, electronics, control and computer technologies, the MAE Department has established a renowned reputation for standing at the forefront of technological innovations and maintaining extensive linkage with the industry.

I believe the success of the Department has contributed significantly to The Chinese University of Hong Kong's position as one of the leading universities in Asia.

In my capacity chairing the Department's Advisory Committee since 2011, I have

witnessed the Department's dedication to providing education and pioneering research of the highest quality. The outcomes-based teaching approach has equipped our students with a solid knowledge foundation and a strong sense of professionalism. As an industry practitioner, I would like to particularly thank the distinguished teaching and research staff of the Department for having nurtured over the years a group of professionals who possess the ability to create, innovate and inspire in the engineering field.



I am confident that the staff, students and alumni of the MAE Department will continue to contribute to the betterment of the engineering industry. I wish the Department continued success in all its future endeavors.

Mr. S.H. Chan, JP
Chairman of the Advisory Committee on Mechanical and Automation Engineering

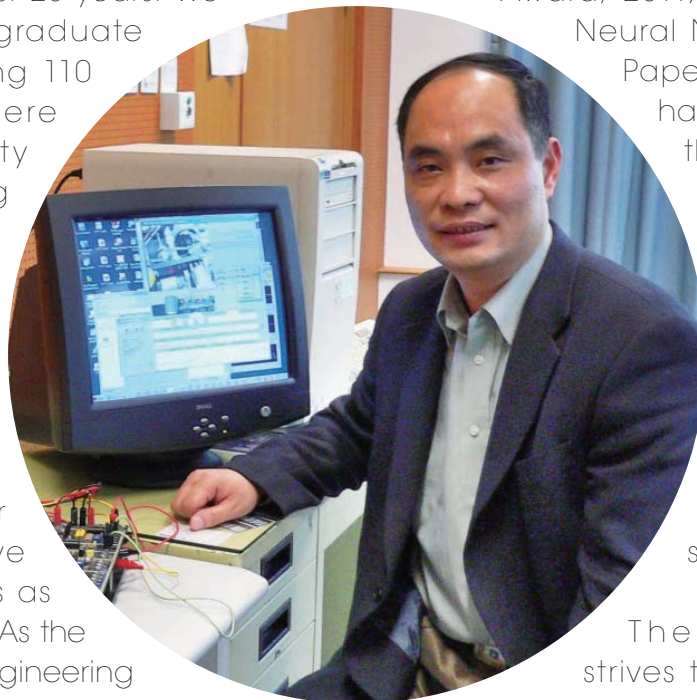


Message from the Department Chairman

The MAE Department was established in 1994. I joined this Department in September 1995 as the eighth faculty member of the Department. There were 1 Professor, 3 Associate Professors and 4 Assistant Professors. The Department admitted 29 students and 60 students in 1994 and 1995, respectively for its undergraduate programme.

The Department has experienced a significant expansion over the past 20 years. We now have two undergraduate programmes admitting 110 students in 2014. There are twenty two faculty members including ten Professors, one Associate Professor, eight Assistant Professors, one Research Assistant Professor, one Senior Lecturer, and one 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, 7 HKIE 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. On this happy occasion, I wish to thank my predecessors Professors C.P. Kwong, Y.S. Xu, Y. Yam, and Ronald Chung for their endeavors, dedication and leadership. Thank you to all my colleagues, staff members and students for making this small Department great.



The MAE Department strives to be one of the best departments in Asia for educating and conducting research in Mechanical and Automation Engineering. The Department has identified five research focus areas including Robotics and Control, Design and Advanced Manufacturing, Biomedical Devices and Systems, MEMS/Nano/Material Technologies, and Energy Technologies. With our strong faculty team and commitment to excellence in education, research and service, we are confident that our Department will maintain its leading status in Hong Kong and continue to scale new heights in the next twenty years.

Professor Huang Jie
*Chairman and Choh-Ming Li Professor of
Mechanical and Automation Engineering*

Message from the Founding Department Chairman

In The Beginning of MAE

Twenty years ago a new academic department was born at The Chinese University of Hong Kong. It was the idea of the Pro-Vice-Chancellor that the four existing departments in the Faculty of Engineering are bit too "soft", and Engineering should appear "hard". He therefore proposed a Department of Mechanical Engineering to be formed. At the time when the PVC gave the Engineering Dean the assignment of setting up the Department, the latter faced a question of how to integrate the new unit to the current four so that harmony could be maintained and his troop be reinforced. He chose the way of softening the hard. The actual implementation of this basic philosophy, together with detailed design of teaching programmes, became the challenge of a group of five teachers drawing from the Department of Information Engineering and the Department of Systems Engineering. Right after one month of their study commencing 1994, the first batch of students was convinced that the use of Mechanical and Automation

Engineering instead of Mechanical Engineering would illuminate much the Department's mission of transforming the oldest engineering discipline into a modern field. The students unanimously endorsed the name change. The motion was passed by the Senate. And the history proves it right.

After 20 years our Department has grown to a much bigger size. Not only that we now own many more students and professors, but also that new areas of study, the latest being Energy, have been introduced along our development timeline. Nevertheless, "Mechanical and Automation Engineering" has provided a robust shelter for us to germinate and bloom.

The above little story tells you how MAE emerged. Unlike a man, aging for an academic department is not a drawback but opportunity to excel.

However, the accumulation of repute towards distinction relies very much on what and how we put our efforts in. Fortunately MAE is still fairly young and our limit is the sky.



Professor Kwong Chung-Ping
Department Chairman, Aug 1994 - Jul 1997



Message from the Second Department Chairman

Congratulations to all dear students and colleagues! I'm much proud of what we have accomplished in quality education, international standard research, and service to our community in the last 20 years. It refreshed my unforgettable memory as a Chairman of the Department. I treasure the time that we spent together in the past, and consider the experience most rewarding in my life. You all have my best wishes in the future endeavor.



Professor Xu Yangsheng
Department Chairman, Aug 1997 – Jul 2004
Professor of Automation and Computer-Aided Engineering
President of The Chinese University of Hong Kong, Shenzhen

Message from the Third Department Chairman

I have the privilege and honor to serve as Chairman of the Department from 2004 to 2011.

It can be said that each Department Chairman faces a unique set of challenges during his term of service. For me, they were on programme re-structuring, student admissions quality and cohesiveness, and a very stringent budgetary situation. Fortunately, I had the great support of our faculty and staff members to tackle these challenges. The measures we took included revamping the curriculum with enhanced professional training, organizing small class teaching of Mathematics, implementing Outcomes-based Approach to teaching, and reverting the name of the Department and programme back to MAE. What I treasure most, however, was not any one thing that we have done but the experience that we did it together, building friendship and bonding among ourselves along the way. To this date, the cordiality among colleagues is a very special and much valued culture of the Department.



Today, I am delighted to see that the Department is doing wonderfully well. MAE is popular among Engineering students, to the extent that it has to over-admit beyond its allocated quota since the Faculty adopted broad-based admissions. We have launched a new Energy Engineering programme that is beginning to make its mark. We have been joined by a number of high-caliber and enthusiastic faculty members in various emerging and exciting areas of research. There will be new challenges and opportunities, no doubt, but I am sure our faculty members will rise to the occasion and bring evolutionary and revolutionary advancements to education and research in our field.

Twenty years is a young age for an academic department. Moving forward, MAE has abundant talents and energy to grow and excel, and to strive towards higher aspirations. Our future will be brilliant. I am proud to be a member of this Department. Happy 20th Anniversary, MAE! And let's march on to the next twenty years and beyond!

Professor Yam Yeung
Department Chairman, Aug 2004 – Jul 2011



Message from the Fourth Department Chairman

On the 20th anniversary of the Department, I offer my warmest congratulations to all those who are or have been associated with the Department. It is because of their concerted efforts that the Department has achieved so much in these 20 years.

All my memories of the Department come back to me on the occasion. I remember I witnessed the establishment of the Department from scratch in 1994, became one of her first few members then, and participated in recruiting a number of top-notch faculty members in the first few years. Armed with these excellent recruits, the Department grew and flourished within a short period of time, and went so far as to having achieved one of the highest scores in the region-wide Research Assessment Exercise conducted by RGC Hong Kong in mid 2000's. The second wave of the Department's growth began in early 2010's, when the Fukushima nuclear disaster happened and renewable energy became an international issue. The Department was

commissioned to take the lead in founding an Energy Engineering Programme for Hong Kong and the vicinity. With generous support of the Engineering Faculty and the University, the new Programme was launched with another major recruitment exercise that allowed a number of young and first-rate faculty members to be added to the Department. The Department began to reach new heights one after the other, making impact to a wider domain of areas.



For almost two decades I have been with the Department. I am proud to having been a part of her, and been able to witness her growth in the first twenty years. The Department will be in my blood for the rest of my life.

Uprise of new challenges is the norm of life and the world. I have every confidence that with the capacity and strong will of the staff and students, the Department will plan proactively and face up to the challenges, breaking new grounds on education and research.

Professor Chung Chi-Kit Ronald
Department Chairman, Aug 2011 - Dec 9, 2012

Congratulation

It makes me remember the wonderful time in our university! Happy Birthday to MAE!

My gratitude to the MAE faculty and staff members for their leadership, hardwork, and unwavering commitment to make this Department distinct from others in CUHK.

Truly thankful for the nurturing environment which prepared us for challenges in different fields.

The academic staff with world-recognized researchers are working hard to guarantee high standards of research and teaching, and the administrative staff are full of enthusiasm and vitality to help students.

A warm home, a cradle of cultivating talents. Happy 20th Anniversary!

The three years at CUHK is one of the best parts of my life. Thanks CUHK! Thanks MAE Department!

Wish that the MAE Department will continue her success and educate more outstanding graduates for Hong Kong, for China and for the world. Happy birthday, MAE!

Congratulate on the 20th Anniversary. Wish MAE all the best and keep her success on training the best engineers in HK!

Messages

Congratulations to MAE! May the Department achieve even more success for the years to come!

My heartfelt thankfulness to all MAE professors and staff who have put together exceptional education programmes and a unique learning environment.

The best learning experience with top faculty, dedicated staff, excellent programmes, superb facilities, abundant resources, and beautiful campus.

Learned a lot about profound scholarship, research experience and professionalism.

On the 20th Anniversary of MAE, I look forward to learning the continuous growth of the Department and the preparation of the next generation workforce in the future.

My fellow teachers, thank you for such an honour; My fellow alumni, let's join hands and move forward.

I wish the Department every success, and keep up the great work in educating the best and brightest engineers of the future generations!

I am proud to be part of the MAE family. Wishing you continued success in the future!

Development and Activities

Twenty Years After

The Department of Mechanical and Automation Engineering (MAE) was established in 1994 with five professors in the areas of control, CAD/CAM, robotics, and computer vision transferred over from other departments. Within a span of twenty years, the Department has grown to twenty-two faculty members, with research expertise expanded to the important areas of MEMS and NANO systems, smart materials, manufacturing, design and optimization, and energy. The Department was renamed Automation and Computer-Aided Engineering (ACAE) for the period between 2000 and 2006, and reverted back to its original name of MAE since October 2006. Currently, the Department offers a full spectrum of undergraduate and postgraduate degree programmes in MAE, and starting from 2012-13, a newly established undergraduate degree programme in Energy Engineering (ENER). The intake number of undergraduate students has also grown from 29 in 1994 to 110 presently, which is among the highest within the Faculty of Engineering.

Notable Milestones and Activities

1994

- Department established with Prof. C. P. Kwong as founding Chairman



• Set up of MAE Dept (August 1994)

- First batch of undergraduate students to MAE Programme admitted

1999

- Organization of the IEEE Hong Kong Symposium on Robotics and Control (HKRSC'99), July 2-3, 1999

2000

- Department and programme names changed to Automation and Computer-Aided Engineering (ACAE) from August 1, 2000
- MSc Programme (Part-time) in ACAE offered
- Organization of the International Symposium on Smart Structures and Microsystems 2000 (IS3M 2000), October 19-21, 2000



1995

- Postgraduate programmes (research) in MAE offered
- Formation of Mechanical and Automation Engineering Society

1997

- First batch of MAE B.Eng. degree students graduated
- Prof. Y. S. Xu served as Department Chairman (August 1997 to July 2004)

1998

- Full HKIE accreditation for B.Eng. (Hons) Programme in MAE (from 1998 to 2000; retroactive and applicable to the first batch of graduates in 1997)
- Department hosted the 107th Xiangshan Scientific Symposium on Telescience and Robotics (first time the Symposium being held outside mainland China), November 12-13, 1998



- Organization of the International Symposium on Image, Speech, Signal Processing and Robotics (ISSPR'98), September 3-4, 1998

2001

- Undergraduate programme in Innovation and Design Engineering (IDE) offered
- Full HKIE accreditation for B.Eng. (Hons) Programme in ACAE (from 2001 to 2005; retroactive and applicable to the first batch of intake in 2000)
- Formation of Department Advisory Committee



- Department started to offer student scholarships with generous donations from local industries



- The Centre for Micro and Nano Systems (jointly with the Department of Electronic Engineering) established with Professor Wen J. Li as Director
- Organization of the IEEE International Conference on Mechatronics and Machine Vision in Practice (M2VIP2001), August 27-29, 2001

2005

- The CUHK Institute of Precision Engineering established with Professor R. X. Du as Director, August 2005
- Launching of the Departmental Work-Study Programme
- Organization of the 2005 IEEE International Conference on Robotics and Biomimetics (ROBIO), June 29-July 3, 2005



- Organization of the 1st Internet-based Robotics Inter-School (IRIS) Competition, May-July 2005 (final competition on July 2, 2005)

2002

- The Joint Centre for Intelligent Sensing and Systems (with the National University of Defense Technology) established with Professor Y. H. Liu as Director

2003

- Offering of the first Summer Course on Railway Engineering 2003 (jointly with engineers from KCRC and MTRCL)



- Organization of the 2003 IEEE Intelligent Automation Conference, December 15-17, 2003



2004

- Prof. Y. Yam served as Department Chairman (from August 2004 to July 2011)
- Offering of the second Summer Course on Railway Engineering 2004 (jointly with the Railway Engineering Specialized Group of IEE-HK)
- Restructuring of the Departmental undergraduate curriculum, with the IDE Programme subsumed into the ACAE Programme as a specialization stream
- Celebration of the 10th Anniversary of the Department and the Moving-in to New Engineering Building (William M. W. Mong Engineering Building)



2006

- Full HKIE accreditation for B.Eng. (Hons) Programme in IDE for all intake classes (from 2000 up to and including the year 2003)
- Full HKIE accreditation for B.Eng. (Hons) Programme in ACAE (for five years or all intake classes up to and including the year 2010)
- Department and programme renamed from ACAE back to MAE, October 2006
- CUHK established the Shenzhen Institute of Advanced Integration Technology (SIAT) jointly with the Chinese Academy of Sciences, with Prof. Y. S. Xu appointed as Director
- MAE faculty members appointed as Centre/ Laboratory Director of SIAT :
 - Professor Y. S. Xu for Center for Intelligent and Biomimetic Systems
 - Professor R. X. Du for Center for Precision Engineering
 - Prof. Ronald Chung for Laboratory for Culture Integration Engineering
- Department received Quality Education Fund (QEF) Project: Innovation Technology Education via Internet-based Robotics Competition (HK\$2 million) for 2 years starting from September 2006
- Department secured an Innovation and Technology Fund (ITF) grant of HK\$60 million to develop technology and facilities for designing and building mechanical watch movements
- Department secured another ITF grant of over HK\$14 million to develop intelligent omni-directional hybrid electric vehicle
- Organization of the Workshop on Hybrid and Embedded Systems: Technologies and Applications, February 22-26, 2006



- Organization of the 2nd Internet-based Robotics Inter-School (IRIS) Competition, between February and July 2006 (final competition on July 2, 2006)



- Establishment of the Departmental Alumni Association, November 2006



2007

- Offering and management of the part-time MSc Programme in Biomedical Engineering (joint programme of Faculty of Engineering and Faculty of Medicine)
- Introduction of Minor Programme in MAE
- Double Degree Programmes in MAE+BBA / BBA+MAE offered
- Organization of the 2nd International Conference of E-Learning and Games (Edutainment 2007), June 11-13, 2007



- Organization of the 3rd Internet-based Robotics Inter-School Competition (2007), between February and May 2007 (final competition on May 26, 2007)



2008

- The Centre for Robotics and Technology Education (CRATE) of Faculty of Engineering established with Professor Y. H. Liu as Director, January 2008



- Visit of Professor Kon-Well Wang, Department Chair and Stephen P. Timoshenko Professor of Mechanical Engineering at the University of Michigan in Ann Arbor, MI, USA, as Wei Lun Visiting Professor, December 2008



- The Joint Research Center for Automation Science and Engineering (JRCASE) between Faculty of Engineering of CUHK and the College of Automation Science and Engineering of South China University of Technology established with Professor J. Huang as Director, December 2008



- Offering of MPhil-PhD Articulated Programme in MAE
- Offering and management of the full-time MSc Programme in Biomedical Engineering (joint programme of Faculty of Engineering and Faculty of Medicine)
- Organization of the 2008 IEEE World Congress on Computational Intelligence, June 1-6, 2008
- Organization of the Shun Hing National Internet Robotics Inter-School Competition, July 25-28, 2008



2009

- Department received QEF Project: Internet-based Education for Design and Innovation (HK\$1.7 million) for 2.5 years starting from March 2009



- Organization of the 20th International Conference on Adaptive Structures and Technologies (ICAST), October 20-22, 2009



- Organization of the National Internet Robotics Inter-School Competition 2009 (final competition held in February 2010)
- Full HKIE accreditation of the renamed Programme B.Eng (Hons) Degree in MAE for all intake classes up to and including the year 2010

2010

- The Joint Research Center for Optomechatronic Design and Engineering (JRCODE), CUHK, and Beijing Institute of Technology established with Professor Y. Yam as Director, May 2010



- Introduction of the Minor Programme in Energy Technology
- Co-organization of the 11th Guangdong-Hong Kong Symposium on Mechanical and Electrical Engineering Technology and Application, December 18, 2010
- Organization of the ICMA2010 – Sustainable Design and Manufacturing, December 13-15, 2010



2011

- Professor Ronald Chung served as Department Chairman (from August 2011 to December 9, 2012)
- Re-offering of the Part-time and Full-time MSc Programme in MAE
- Full HKIE accreditation for B.Eng. (Hons) Programme in MAE for five years for all intake classes up to and including the year 2015 (including the programme under the Double Degree in Engineering and Business Administration)
- Organization of the ISOT2011 International Symposium on Optomechatronic Technologies, November 1-3, 2011



2013

- Organization of the 12th ACM International Conference on Virtual-Reality Continuum and its Applications in Industry (VRCAI 2013), November 17-19, 2013



- Co-organization of Tech Forum: Innovative Energy Technologies in InnoAsia 2013, December 6, 2013

2014

- Celebration of the 20th Anniversary of Department
- Formation of Energy Engineering Society
- Department secured the RGC Collaborative Research Fund of HK\$9,896,000 for the project of "Assistive Surgical Robots" starting from June 1, 2014
- Organization of the International Convention on Solid and Physical Modeling (SPM), October 26-28, 2014
- Organization of the International Convention on Shape Modeling International (SMI), October 28-30, 2014



• Academic Staff (May 2014)

2012

- Professor J. Huang serves as Department Chairman starting from December 10, 2012
- Inauguration of the IMechE HK Branch - CUHK Student Chapter, February 2, 2012



- Offering of the 334 Curriculum in MAE Programme on faculty broad-based admission basis
- Launching of a new 334 Curriculum in ENER Programme on faculty broad-based admission basis



- Interim recognition from HKIE for the 4-year B.Eng. (Hons) Programme in MAE for all intake classes from the year 2012 up to and including the year 2015 (including the programme under the Double Degree in Engineering and Business Administration)



• Admin, Computing and Technical Teams (May 2014)

Faculty Members



BIAN Liming
Assistant Professor

<http://www.mae.cuhk.edu.hk/~lbian>

Prof. Liming Bian earned his PhD degree in Biomedical Engineering under the advisory of Dr. Clark Hung and Dr. Gerard Ateshian at Columbia University in 2009. After three years of postdoctoral research with Dr. Jason Burdick and Dr. Robert Mauck in the Department of Bioengineering at the University of Pennsylvania, Prof. Bian joined CUHK as an Assistant Professor in the Department of Mechanical and Automation Engineering starting in August 2012.

Research Interests

- **Functional Biomaterials:**
 - bio-functional polymeric biomaterial scaffolds for tissue engineering applications: biomimetic materials to present microenvironmental cues to guide cell/tissue development
 - physically functional biomaterials for clinical applications: mechanically robust, injectable and stimuli-responsive materials
 - nanomaterials for gene/drug delivery and molecular imaging/detection
- **Stem Cell Tissue Engineering:**
 - cartilage repair/regeneration



CHEN Shih Chi
Assistant Professor

<http://www.mae.cuhk.edu.hk/~scchen>

Prof. Shih-Chi Chen received his BS degree in Mechanical Engineering from the National Tsing Hua University, Taiwan, in 1999. He received his SM and PhD degrees in Mechanical Engineering from the Massachusetts Institute of Technology, Cambridge, in 2003 and 2007, respectively. Following his graduate work, he entered a postdoctoral fellowship in the Wellman Center for Photomedicine, Harvard Medical School, where his research was focused on biomedical optics and endomicroscopy. His current research interests include precision engineering, biomedical optics/devices, MEMS and nanomanufacturing. Prof. Chen is a Member of the American Society of Mechanical Engineers (ASME) and the American Society for Precision Engineering (ASPE). He is the recipient of 2003 R&D 100 Award and 2013 Early Career Award.

Research Interests

- **Precision Engineering:** compliant mechanisms, machine components, automated machines, and precision engineering principle.
- **Biomedical Optics/Devices:** novel optical imaging techniques and instrumentations for in vivo biological studies (e.g. microscopes and endomicroscopes).
- **Microelectromechanical Systems (MEMS):** small-scale machines and instruments for various applications.
- **Nanomanufacturing:** novel and unconventional methods for low-cost, high-resolution, manufacturing processes.

Faculty Members



DU Ruxu
Professor

<http://www.mae.cuhk.edu.hk/~rdu>

Prof. Ruxu Du received his Master's degree from the South China University of Technology in 1983 and his PhD degree from the University of Michigan in 1989. He has taught in the University of Windsor, Windsor, Ontario and University of Miami, Coral Gables, Florida. Currently, he is a Professor in the Department of Mechanical and Automation Engineering at The Chinese University of Hong Kong (CUHK). He is also the Director of the Institute of Precision Engineering of CUHK. Prof. Du is a Fellow of Society of Manufacturing Engineers, Fellow of America Society of Mechanical Engineers and Fellow of Hong Kong Institute of Engineers. He has published more than 400 papers and academic journals and international conferences.

Research Interests

- **Design and Manufacturing:** metal forming, machining, plastic injection molding and etc.
- **Robotics and Automation:** robot fish, low cost automation and high performance robot in factory.



GUO Ping
Assistant Professor

<http://www.mae.cuhk.edu.hk/~pguo>

Prof. Ping Guo received his BS degree in Automotive Engineering from Tsinghua University in 2009. He received his PhD degree in Mechanical Engineering under the advisory of Dr. Kornel F. Ehmann from Northwestern University in 2014. He then joined the Department of Mechanical and Automation Engineering at The Chinese University of Hong Kong as an Assistant Professor starting in August 2014. His research interests center on the paradigm of micro-manufacturing, including surface texturing, process micro-mechanics, miniature machine tools, micro-additive manufacturing, etc.

Research Interests

- Micro/Meso-scale Manufacturing Processes, Process Modeling and Control
- Vibration Assisted Machining/Texturing, Micro-cutting Mechanics
- Micro-additive Manufacturing
- Miniature Machine Tools, Embedded Sensors





HUANG Jie <http://www.mae.cuhk.edu.hk/~jhuang>
Choh-Ming Li Professor of Mechanical and Automation Engineering

Prof. Jie Huang studied Power Engineering at Fuzhou University from 1977 to 1979 and Circuits and Systems at Nanjing University of Science and Technology (NUST) from 1979 to 1982. He got his Master's degree from NUST in 1982 and was a faculty member there from 1982 to 1986. He completed his PhD study in automatic control at the Johns Hopkins University in 1990 and subsequently held a Postdoctoral Fellow position there until July 1991. From August 1991 to July 1995, he worked in industry in the USA. In September 1995, he joined the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong (CUHK), and is now Choh-Ming Li Professor of Mechanical and Automation Engineering and Department Chairman there. He has served as Editor-at-Large/Editor/Associate Editor/Guest Editor for more than 10 International Journals. He served as a Science Advisor to the Leisure and Cultural Services Department of Hong Kong Special Administrative Region, and Honorary Advisor to Hong Kong Science Museum, Distinguished Lecturer of IEEE Control Systems Society, and member of the Board of Governors of IEEE Control Systems Society. He delivered plenary/keynote speeches in numerous international conferences.

Research Interests

- Control Theory and Applications
- Guidance and Control of Flight Vehicles
- Robotics and Automation
- Systems Biology

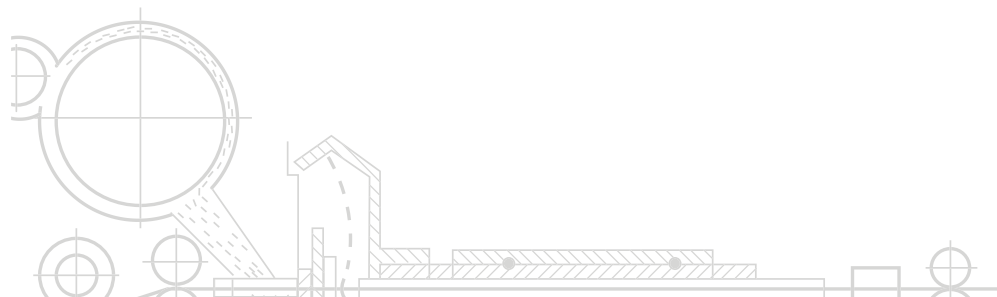


HUI Kin Chuen <http://www.mae.cuhk.edu.hk/~kchui>
Professor

Prof. K.C. Hui received his BSc and PhD in Mechanical Engineering in 1979 and 1990 respectively from the University of Hong Kong. Before joining The Chinese University of Hong Kong (CUHK) in 1992, he was a consultant in the CAD Services Centre of the Hong Kong Productivity Council. He is currently a Professor of the Mechanical and Automation Engineering Department at CUHK, and is the Director of the Computer-Aided Design Laboratory. He is an editorial board member of the Journal of Computer-Aided Design. He is a Chartered Engineer, a fellow of the Hong Kong Institution of Engineers, a member of the British Computer Society, and a member of the Institution of Mechanical Engineers.

Research Interests

- **Geometric and Solid Modeling:** developed algorithms for manipulating complex geometric shapes.
- **Virtual Reality and Their Applications:** applied virtual reality technology for rendering traffic noise with stereo effects.



Faculty Members



LEUNG Suk Wai Winnie <http://www.mae.cuhk.edu.hk/people/swleung.html>
Lecturer

Dr. Leung Suk Wai Winnie has been a Lecturer at the Department of Mechanical and Automation Engineering since 2011. Prior to that, she obtained her PhD in Electronic and Computer Engineering from the Hong Kong University of Science and Technology. In Canada, Dr. Leung earned her BAsC in Systems Design Engineering from University of Waterloo in 2002 and MASc in Aerospace Engineering from University of Toronto Institute for Aerospace Studies in 2004. She has also worked in the Canadian/European aerospace industry as a Control Engineer between 2004 and 2006. Dr. Leung was the recipient of the most innovative proposal award for Apophis Mission Design Competition hosted by the Planetary Society. She has published more than 20 technical papers in international journals and conferences.

Research Interests

- **Aerospace System Design and Engineering:** mission, spacecraft and instrument design for aerospace applications; e.g. Mars rover locomotive, asteroid tracking satellite mission design, rock abrasion tool and corer for planetary exploration.
- **Robotic Dynamics and Control:** system identification and modelling of multi-body robotic system and advanced robot configuration and parameter control using genetic algorithms.
- **Parallel Robots:** modelling the dynamics of flexible parallel robots in high-speed application to provide simulations of high fidelity.



LI Yiyang <http://www.mae.cuhk.edu.hk/people/yli.html>
Senior Lecturer

Dr. Li Yiyang received his BEng in Mechanical Engineering and MPhil in Solid Mechanics in 1991 and 1995, respectively, both from Fuzhou University. He started his PhD programme studying structural dynamics at The Hong Kong Polytechnic University (PolyU) in 1995. Prior to joining this Department in 2006, he was a Research Fellow with the Research Center for Noise Abatement and Control of PolyU since August 2001, where he worked on structural health monitoring, vibro-acoustic coupling analysis and noise control. Dr. Li is now a Senior Lecturer in the Department.

Research Interests

- **Noise and Vibration Control:** develop active and passive control methods for double-wall structures and irregular-shaped cavities; study the vibro-acoustic coupling mechanism for structures with PZT/PVDF patches.
- **Damage Detection:** investigate robust damage detection and control strategies for laminated composite plates.



LIAO Wei Hsin
Professor

<http://www.mae.cuhk.edu.hk/~whliao>

Prof. Wei-Hsin Liao received his PhD in Mechanical Engineering in 1997 from The Pennsylvania State University, University Park, USA. Since August 1997, Prof. Liao has been with The Chinese University of Hong Kong. He was the Conference Chair for the 20th International Conference on Adaptive Structures and Technologies (ICAST 2009); Active and Passive Smart Structures and Integrated Systems, 2014 SPIE Smart Structures/NDE. As the Chair of Joint Chapter of Robotics, Automation and Control Systems Society, IEEE Hong Kong Section, Prof. Liao received 2012 Chapter of the Year Award from the IEEE Robotics and Automation Society. Prof. Liao currently serves as an Associate Editor for *Journal of Intelligent Material Systems and Structures*, as well as *Smart Materials and Structures*. He is a Fellow of the American Society of Mechanical Engineers (ASME), Institute of Physics (IOP), and The Hong Kong Institution of Engineers (HKIE).

Research Interests

- Smart Materials and Structures
- Vibration Control
- Energy Harvesting
- Mechatronics
- Precision Machinery
- Exoskeleton, Medical Devices



LIU Yunhui
Professor

<http://www.mae.cuhk.edu.hk/~yhliu>

Prof. Yunhui Liu received his BEng, MEng and PhD degrees from Beijing Institute of Technology, Osaka University and University of Tokyo in 1985, 1987 and 1992, respectively. After working as a research scientist at the Electrotechnical Laboratory, MITI, Japan for three years, he joined CUHK in 1995 and is currently a Professor in the Department of Mechanical and Automation Engineering.

Research Interests

- **Robotics:** Investigate new methodologies for design and control of robotic systems, in particular robot design for robot-assisted surgery, vision-based control of robotic systems, robotic manipulation control of deformable objects, networked robots, and human-robot collaboration. Applications of robots in industrial and service sectors are also our interests.
- **Biomedical Engineering:** Study automatic medical diagnosis based on cell morphology including focus-free and lens-free 3D cell imaging technology and automatic recognition of TB and E. Coli.
- **High-speed Vision Technology:** Investigate high-speed image capturing and processing technology (200-100k fps for VGA or high resolutions) and its applications in different areas such as particle image velocimetry, high-frequency vibration analysis, and motion measurement of extra high-speed objects.

Faculty Members



LU Yi Chun
Assistant Professor

<http://spring.mae.cuhk.edu.hk/~yichunlu/>

Prof. Yi-Chun Lu received her BS degree in Materials Science & Engineering from the National Tsing Hua University, Taiwan, in 2007. She received her PhD degree in Materials Science & Engineering from the Massachusetts Institute of Technology (MIT), Cambridge, USA in 2012. After graduation, she worked as a Postdoctoral Fellow in the Department of Chemistry at the Technische Universität München, Germany. Prof. Lu has been appointed as a Research Affiliate of MIT since 2013. She is currently an Assistant Professor in the Department of Mechanical and Automation Engineering at The Chinese University of Hong Kong. She currently serves as an editorial board member for *Scientific Reports* (Nature Publishing Group).

Research Interests

- **Functional Materials for Energy Storage and Conversion:** electrode and electrolyte design for high-energy metal-air and metal-sulfur batteries; develop redox-active components and solution chemistry for redox-flow batteries.
- **Electrochemical Interfacial Chemistry:** develop mechanistic understanding of interfacial phenomena governing electrochemical energy conversion and storage processes.
- **Electrode Kinetics and Electrocatalysis:** probe reaction kinetics and develop electrocatalysts for metal-air batteries, fuel cells and electrolyzer applications.



MAK Fuk Tat Arthur
Professor

<http://www.mae.cuhk.edu.hk/people/amak.html>

Prof. Arthur Mak obtained his BSc in Engineering Mechanics with the highest honor from University of Illinois at Urbana-Champaign in 1976 and earned his PhD in Biomechanics at Northwestern University in 1980. After spending 3 years of postdoctoral fellowship under Prof. Van Mow at Rensselaer Polytechnic Institute, Prof. Mak took up an Assistant Professorship in Bioengineering and Orthopedic Research at University of Pennsylvania. He joined the Jockey Club Rehabilitation Engineering Center at Hong Kong Polytechnic University in 1988 and became Chair Professor of Rehabilitation Engineering in 1997. In 2005 to 2009, he served as the Founding Head of the Department of Health Technology and Informatics. Prof. Mak was PolyU's Associate Vice President (Academic Development) in 2006 to 2010 and Founding Dean of Students in 2008 to 2011. In 2011, he joined CUHK as a Professor in Biomedical Engineering, both in Depts of EE and MAE. He is currently serving as Director of Biomedical Engineering Programme and Head of Graduate Division of Biomedical Engineering at CUHK. He is a member of the World Council on Biomechanics. He was President of the World Association for Chinese Biomedical Engineers in 2009 to 2011, and was on the Executive Board of the International Society for Prosthetics and Orthotics in 2007 to 2010. Prof. Mak has held visiting/adjunct positions at Sichuan University, Peking University, University of Pittsburgh, and Eindhoven University of Technology.

Research Interests

- **Biomaterials and Biomechanics in Tissue Engineering**
- **Mechanical Damage of Cells and Their Repairs, Pressure Ulcers**
- **Musculoskeletal Biomechanics**
- **Rehabilitation Engineering**



QIAN Huihuan

<http://www.mae.cuhk.edu.hk/people/hhqian.html>

Research Assistant Professor

Prof. Huihuan Qian received his BEng at Automation Department from University of Science and Technology of China in 2004. In 2010, he completed his PhD at Department of Mechanical and Automation Engineering from The Chinese University of Hong Kong, where he worked as Research Associate after his graduation and as Research Assistant Professor currently. His research interests include robotics, video surveillance, and intelligent vehicles.

Research Interests

- **Robotics:** design and develop robotic systems for industry and household service; develop human-machine interface; develop the traction control and omni-directional motion algorithms for multi-wheeled robotic systems; study climbing robots.
- **Surveillance:** develop the intelligent video surveillance system for behavior learning; model the crowd behaviors in videos.
- **Vehicle:** design and develop the omni-directional vehicle for agile motion; design energy saving methodologies, e.g. distributed traction for enhanced efficiency, idle stop-start, etc.; study vehicle-to-vehicle communication.



REN Wei

<http://www.mae.cuhk.edu.hk/people/renwei.html>

Assistant Professor

Prof. Wei Ren received his BS and MS degrees from Tsinghua University in 2006 and 2008, respectively. He completed his PhD study in Mechanical Engineering at Stanford University in 2013. After one year of postdoctoral research in the Department of Electrical and Computer Engineering at Rice University, Prof. Ren joined CUHK as an Assistant Professor in the Department of Mechanical and Automation Engineering in August 2014. His current research focuses on the development of new technologies and the understanding of basic principles in the areas of combustion and propulsion, alternative fuels, and optical sensing.

Research Interests

- **Laser Diagnostics:** develop laser-based diagnostics for in situ measurements of various flow field parameters for applications in scramjet, pulse detonation engine, gas turbine engine, coal-fired power plant and other combustion and propulsion systems.
- **Spectroscopic Instrumentation:** design ultra-sensitive laser spectroscopic instrumentation for trace gas detection and chemical sensing in atmospheric chemistry, environmental monitoring, industrial process control, and biomedical research.
- **Combustion Science and Advanced Propulsion:** study the oxidation and ignition behaviors of traditional and alternative fuels using shock tube/laser absorption techniques.

Faculty Members



WANG Changling Charlie
Associate Professor

<http://www.mae.cuhk.edu.hk/~cwang>

Prof. Charlie C. L. Wang gained his BEng (1998) in Mechatronics Engineering from Huazhong University of Science and Technology, MPhil (2000) and PhD (2002) in Mechanical Engineering from The Hong Kong University of Science and Technology. He is currently an Associate Professor at the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong. He also held a visiting faculty position at the Department of Industrial and System Engineering, University of Southern California in 2011. Prof. Wang serves on the editorial board of a few journals including Computer-Aided Design, ASME Journal of Computing and Information Science in Engineering, and International Journal of Precision Engineering and Manufacturing. He has received some awards for research and education, which includes the ASME CIE Young Engineer Award (2009), the CUHK Young Researcher Award (2009), the CUHK Vice-Chancellor's Exemplary Teaching Award (2008), the Best Paper Awards of ASME CIE Conferences (in 2008 and 2001), and the Prakash Krishnaswami CAPPD Best Paper Award of ASME CIE Conference in 2011. He is a Fellow of the American Society of Mechanical Engineers (ASME).

Research Interests

- Geometric Modeling
- Design and Manufacturing
- Computational Physics



WANG Jun
Professor

<http://www.mae.cuhk.edu.hk/~jwang>

Prof. Jun Wang received his BEng and MEng degrees from Dalian University of Technology in 1982 and 1985, respectively, and his PhD degree from Case Western Reserve University in 1991. He has various teaching and research experience at Dalian University of Technology, Case Western Reserve University, University of North Dakota, US Air Force Research Laboratory, Japanese RIKEN Brain Science Institute, Huazhong University of Science and Technology, and Shanghai Jiao Tong University.

Research Interests

- **Neurodynamic Optimization:** develop brain-like computationally intelligent methods for solving various optimization problems including constrained nonsmooth and nonconvex optimization problems.
- **Intelligent Control:** develop neurodynamics-based intelligent control methods for linear and nonlinear control systems including robust pole assignment and model predictive control.
- **Intelligent Robotics:** develop neurodynamics-based intelligent methods for real-time motion planning, control and optimization of kinematically redundant robot manipulators and multi-fingered robotic hands.
- **Intelligent Data Processing:** develop neurodynamics-based intelligent methods for data selection, sorting, filtering, clustering, and associative memories.



WONG King-Lap <http://www.mae.cuhk.edu.hk/people/kinglapwong.html>
Professor

Prof. King-Lap Wong obtained his PhD degree from the University of Wisconsin - Madison. After one postdoctoral year at Columbia University, he worked for the Plasma Physics Laboratory of Princeton University from March 1, 1976 until he retired on November 30, 2011 at the rank of Principal Research Physicist. This is a government laboratory established to develop nuclear fusion energy for peaceful applications. Prof. Wong has been doing energy research since he was a graduate student. Although his focus is in nuclear fusion, he always pays close attention to all forms of energy research because the 1973 OPEC oil embargo always reminds him of the vulnerability of a modern society to energy shortage. The recent concern of global warming just makes it a more urgent issue. Prof. Wong received the 2004 American Physical Society John Dawson Award for Excellence in Plasma Physics Research. He has been an American Physics Society Fellow since 1993.

Research Interests

- **Energy Technologies and Their Environmental Implications**
- **Nuclear Fusion Energy Development, especially Fusion Temperature Plasma Physics:** linear and nonlinear physics associated with waves and instabilities; phenomena associated with the energetic alpha particles in DT fusion; anomalous electron transport in high temperature plasmas; stochastic magnetic field effects on electron transport; magnetic islands in tokamaks.



XU Dongyan <http://www.mae.cuhk.edu.hk/~dlyxu>
Assistant Professor

Prof. Dongyan Xu received her BEng, MEng and DEng degrees from the Department of Engineering Mechanics at Tsinghua University in 1998, 2004, and 2004, respectively. She received her PhD degree from the Department of Mechanical Engineering at Vanderbilt University in 2008. After that, she worked as a Postdoctoral Fellow in the Department of Mechanical Engineering at the University of California, Berkeley, for two years. She joined the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong, as an Assistant Professor in August 2010.

Research Interests

- **Thermoelectrics:** develop efficient nanostructured thermoelectric materials; fundamentally understand phonon and electron transport in nanostructured materials.
- **Thermal Management:** explore boiling heat transfer limits with microstructured surfaces; develop novel thermal interface materials with low thermal resistance.
- **Micro/Nanofluidics:** develop novel micro/nanofluidic devices for biomedical applications.



Faculty Members



XU Yangsheng

Professor of Automation and Computer-Aided Engineering

<http://www.mae.cuhk.edu.hk/~ysxu>

Prof. Yangsheng Xu is the President of The Chinese University of Hong Kong, Shenzhen, and Professor of Automation and Computer-Aided Engineering. He is also the Associate Director of the Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences. He has been working in The Chinese University of Hong Kong since 1997 and served as Department Chairman, Assistant to President, Associate Pro-Vice-Chancellor, Pro-Vice-Chancellor, and the Director of Shenzhen Research Institute previously. Prof. Xu received his PhD from University of Pennsylvania. Prof. Xu's research includes robotics, control and dynamics. More recently, he has been interested in service and space robotics, man-machine interface and intelligent electric vehicles. He has published six books and over 300 papers in journals and international conferences. He was elected as Academician of Chinese Academy of Engineering, Fellow of International Academy of Astronautics, Fellow of IEEE, Academician of International Eurasian Academy of Sciences, and Fellow of Hong Kong Academy of Engineering Science.

Research Interests

- **Robotics:** space robotics, service robotics, robot design and control.
- **Dynamics and Control:** dynamically stabilized system, learning control.
- **Human Interface:** wearable interface, video surveillance and visual interface.
- **Intelligent Vehicles:** energy and battery management, hybrid electric vehicle, vehicle motion control.



YAM Yeung

Professor

<http://www.mae.cuhk.edu.hk/~yyam>

Prof. Yeung Yam received his BSc degree in Physics from CUHK in 1975, MSc degree in Physics from the University of Akron, OH, USA in 1997, and MSc and DSc degrees in Aeronautics and Astronautics from the Massachusetts Institute of Technology, MA, USA in 1979 and 1983, respectively. After eight years with the Control Analysis group of the Jet Propulsion Laboratory in Pasadena, CA, USA, he joined CUHK in 1992 and is currently a Professor in the Department of Mechanical and Automation Engineering. Prof. Yam is also the Associate Master of the Lee Woo Sing College of the University.

Research Interests

- **Tensor-Product (TP)-based Control Design Approach:** development of a computation-based control design methodology capable of accommodating both conventional and non-conventional modeling approaches.
- **High-Dexterity Robotic Control:** development of robotic systems to facilitate execution of precise and yet fluidic motions critical in specific tasks such as Chinese calligraphy and robotic surgery.
- **Modeling of Biological Systems:** analysis and modeling of the electrophysiological system and its phenomena.



YUAN Haidong
Assistant Professor

<http://www.mae.cuhk.edu.hk/~hdyuan>

Prof. Haidong Yuan received his BE in Electronic Engineering from Tsinghua University, Beijing, 2001. He got his MS in Engineering Science in 2002 and PhD in Applied Mathematics in 2006, both from Harvard University. He then did his postdoctoral work at Harvard University and Massachusetts Institute of Technology. From August 2012 to August 2014, he worked as an Assistant Professor at the Department of Applied Mathematics, The Hong Kong Polytechnic University. He joined the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong as an Assistant Professor in September 2014.

Research Interests

- **Dynamical System and Control Theory:** nonlinear control theory; geometric control theory; optimal, robust, and stochastic control.
- **Modeling and Control of Systems at Micro, Nano and Mesoscopic Scale:** spin dynamics, control of coherent spectroscopy, Ion trap, superconducting quantum interference devices, nuclear magnetic resonance, magnetic resonance imaging, quantum optics.
- **Quantum Information and Quantum Computing**
- **Complex Systems and Networks**



ZHANG Li
Assistant Professor

<http://www.mae.cuhk.edu.hk/~lizhang>

Prof. Li Zhang received the PhD degree in Physics from the University of Basel, Switzerland, in 2007. From 2002 to 2006, he was also with the Laboratory for Micro- and Nanotechnology, Paul Scherrer Institute, Switzerland. He joined the Institute of Robotics and Intelligent Systems (IRIS), Swiss Federal Institute of Technology (ETH) Zurich, Switzerland, as a Postdoctoral Fellow in 2007, and as a Senior Scientist from 2009 to 2012. He is currently an Assistant Professor in the Department of Mechanical and Automation Engineering and an associate faculty member in the Biomedical Engineering Programme at CUHK.

Research Interests

- **Micromachines and Nanorobots:** develop remote-controlled functional micromachines and nanorobots for biomedical applications; develop micro- and nanorobotic platforms for on-demand robotic tasks.
- **Micro- and Nanotechnology:** bridge micro-/nanotechnology and new materials with robotics at small scales; micro-/nanofabrication technique.
- **Functional Nanomaterials:** design, characterization and applications of nanomaterials for energy storage and green environment.

Former Full-time Academic Staff

The following is a list of former full-time academic staff between August 1994 and July 2014.



Prof. Peter CAINES
(Visiting Professor)



Prof. GE Qiaode Jeffrey
(Visiting Associate Professor)



Prof. Raffi Roupen KAMALIAN
(Visiting Assistant Professor)



Prof. KONG Ching Tom
(Research Assistant Professor)



Prof. LI Wen Jung
(Professor)



Prof. CHUNG Chi Kit Ronald
(Professor and Former
Department Chairman)



Dr. Denis Pierre GILLET
(Visiting Scholar)



Dr. KIANG Kai Ming
(Instructor)



Prof. KWONG Chung Ping
(Professor and Founding
Department Chairman)



Prof. MENG Qing Hu Max
(Visiting Professor)



Prof. James K. MILLS
(Visiting Professor)



Prof. SHEN Mo How Herman
(Visiting Associate Professor)



Prof. WANG Yu Michael
(Professor)



Prof. YAO Zhiyang
(Assistant Professor)



Prof. YEUNG Siu Kau Stephen
(Associate Professor)



Mr. NG Wai Man
(Instructor II)



Prof. SHI Xiaolun
(Associate Professor)



Mr. WONG Tak Pui David
(Instructor II)



Prof. YI Dingrong
(Visiting Assistant Professor)



Prof. ZHU Weidong
(Assistant Professor)

Living Stories of Three Brothers:

Alan Lam,
Raymond Lam,
and Josh Lam



Alan Lam

Chairman and Chief Executive Officer

Sengital Limited, HK

- PhD (ACAE), 2004

- MPhil (MAE), 2001

- BEng (MAE), 1999

- Member/Advisory Board Member of various professional associations (e.g. VTC Electronics & Telecommunications Training Board, HKTDC Electronics/Electrical Appliances Industries, etc.)
- Adjunct Professor and Advisory Board Member of Department of Electronic Engineering of City University of Hong Kong
- Chair of CUHK Alumni Associations (e.g. Engineering Faculty Alumni Association, ACAEAA, MAEAA)



Raymond Lam

Assistant Professor

Department of Mechanical and Biomedical Engineering

City University of Hong Kong, HK

- MPhil (ACAE), 2005

- BEng (ACAE), 2003

- Champion of Institute of Electrical and Electronics Engineers (IEEE) graduate student paper contest for the Asia-Pacific region in 2005
- The Croucher Foundation Scholarship for 2005 to 2008



Josh Lam

Postdoctoral Fellow

MAE Department

The Chinese University of Hong Kong, HK

- PhD (MAE), 2013

- MPhil (ACAE), 2008

- BEng (ACAE), 2006


- 2nd Prize of 2005 Undergraduate Student Contest organised by the IEEE
- Best Student Poster Award for the Student Posters Competition for Joint Faculty Research Day 2008, CUHK
- Best Paper Award and Best Demonstration Award at the 4th Beijing-Hong Kong International Doctoral Forum 2009

Interestingly, all three Lam brothers did both their undergraduate and graduate degrees at CUHK's Department of Mechanical and Automation Engineering. Alan, the eldest brother, graduated his bachelor degree in 1999, received his MPhil and PhD degrees in 2001 and 2004 respectively. Raymond, the second brother, graduated his bachelor and MPhil degrees in 2003 and 2005 respectively. Josh, the youngest brother, received his bachelor, MPhil and PhD degrees in 2006, 2008 and 2013 respectively.

Having studied at the same Department, the Lam brothers, however, have three different individual developments according to their own characteristics. Alan, the founder and CEO of Sengital Limited, always has novel ideas on technology. Auto-navigation system, flight simulation and enlarged TV screen in tablet PC products are examples of his products. Raymond, currently an assistant professor in City University of Hong Kong, devotes his efforts to research and education in biomedical technology. He focuses his research on microfluidics and specializes in the applications of microfluidics and micro-structure to make in-depth analyses of cell dynamics. Josh, a postdoctoral fellow at MAE Department, is interested in combining technology with life and culture. He anticipates that through capturing and imitating the characteristics of human actions, robots will be able to emulate, participate, and even replace human beings in activities which require fine movements, such as painting and cooking. His interest lies not only in simulation and replication, but also in making art.

Innovation is the Integration of Observation, Comprehension and Revolution

Although the three brothers are from the same family background, with similar education at the same University, they have different understanding and interpretations of innovation. Josh explained that his idea to innovation is mainly based on the understanding to a problem. Innovation is usually created through



discussion. In contrast, Raymond emphasized that innovation should not be limited to any boundary. To create novel ideas, the first thing is to question about one's own interest, and then his/her own ability and background in the corresponding field. One should also think about what kinds of and how much resources are available. With all these conditions in mind and a little creativity as supplement, the outcome could be optimized. Alan, who often considers things from a different angle, thinks that creativity can be induced when three elements are put together - observation, comprehension and revolution. He explained that market research (observation) is necessary for knowing our own strength and generating themes for projects. New elements are then mixed together based on the theme (comprehension) to generate a feasible research direction. Meanwhile, we also need to have a "revolution" attitude, i.e., not to do what others are doing. Alan, with his business experiences, reminded us that having multiple perspectives and being revolutionary are the best way of inducing creativity, and even profits too at times.

Being brought up in public housing estates has made the three brothers treasure resources and opportunities all the more. Raymond and Josh have different interpretations on strengths and weaknesses. Raymond said, "Parents need not correct all the weaknesses or inadequacies of their children. Instead, they should let them remain that way so that the children can rectify themselves in the future. The indelible experience will be beneficial for them." Josh said, "The strength of children should be developed since childhood. For instance, if they learn computer skills well, they would be interested and get to know more about other computer applications. Through acquiring and grasping new knowledge and skills, children will be more self-satisfied and confident of themselves."

The Success Formula

Alan had participated in various competitions

since his secondary school days. He would use a packet of potato chips as rewards to seek help from Raymond and Josh to cut card boards and paper cards, and collect materials to make models. By making concerted efforts, the three brothers had won much admiration and reputation. Alan had also related his study in Mechanical and Automation Engineering to his interest in assembling toy cars, and even blocks. So is that it? "Toy was just one of the reasons. Being the eldest brother in the family, I had a really firm determination to succeed." Alan affirmed the impact of the determination. He also summarized a "formula" to success from the three brothers' experiences, i.e., "poverty + family education + CUHK + Engineering Faculty + MAE = 3 prominent brothers". Alan, who has great passion for his alma mater, repeatedly emphasized the great impact the University, the Faculty and the Department had on him and how much he appreciated them.

All the three brothers feel deeply for the Department of Mechanical and Automation Engineering. Alan said, "The Department has taught me how to learn and given me keys to open different doors of knowledge— theory, mechanics, electronics, mathematics, etc." The Department had encouraged this "ordinary" science student to step in and work well in various fields, including business planning. Raymond, who has studied overseas and obtained a PhD degree in Mechanical Engineering from MIT, likes to compare local students with his peers at MIT. He said that local students are smart and hardworking, but their foundation may not be broad enough. The overseas academic research environment is very different from that in Hong Kong, and he hopes that students will be benefited from the longer study period after the 334 education reform. He has high expectations for automation, saying, "Everything is within a system. How to automate this 'system' is the mission of MAE graduates." Josh also has great expectations for automation. From the hot trend of iPhone, he foresees the application of automation in outer space. He

believes automation will soon go a step further and replace human beings in certain kinds of work, and even missions. "The progress of automation depends on how we perceive and apply what we have learnt." Josh said.

The Campus Life of the Three Brothers

The three brothers all have unforgettable memories about their campus life. Alan presented a picture of the three brothers taken in the University in the last year of his postgraduate life. His experience is rare and unforgettable because research is a lonely path, but luckily he had two brothers, who share common language and brotherhood with him, to fight side by side with him in his final year. Although this means a lot to him, he does feel guilty about this, "I seem to have led my two younger brothers in a bad way, made them work overnight and didn't give them enough rest. This made our parents worried. Later on, my brothers even 'lived' in my hostel. So, our parents lost all their sons and no one took care of them." Josh recalled that his campus life was based in Alan's hostel. He was a first year undergraduate student back then. Under the influence of his two elder brothers, he was very much used to having discussions on topics related to science. And he did feel pressure in front of his brothers, whose achievements were so remarkable.

Josh still remembers clearly that the three brothers sometimes would watch movies together in Alan's room. However, whenever they did so, they would unconsciously talk through scientific research; and the movies would become the background music of the "seminars" in the end. To Raymond, the most unforgettable thing in his campus life is his participation in a thesis contest organized by the IEEE. He sacrificed his time for lessons, and hid himself in the library to collect data and information for the contest. Finally, he beat all third year undergraduates in Hong Kong and won the competition—and he was just a freshman at that time. Raymond appreciates the learning atmosphere and environment of

CUHK and the Department, which had turned him from a student into an independent scientific scholar. "When you have a goal, face it and try your best to accomplish it by yourself." Raymond said.

Technology Helps Change the World

Raymond and Josh wish to send a message to the fellow students and graduates of the Department who are interested in innovation and technology: Success is nothing more than recognizing your own talent and interest, and holding onto your goal without caring what others think. Of course, we must bear the responsibility for the consequence ourselves. The scientific technology industry developed by Alan is different from traditional industries. It can improve human lives by changing the habits of human beings and providing a better quality of life. It is a career that is worthwhile for the young people to devote themselves to. Apart from doing businesses, Alan also contributes to the industry and the society by serving as member of the Board of Governors and committee member for various institutions and industry organizations. Raymond hopes his research work in biomedical engineering can truly help patients while Josh will further research and develop robot technology.



Three Brothers (from left): Dr. Josh Lam, Dr. Alan Lam and Dr. Raymond Lam

Outstanding Alumni



Dr. AU Kwok Wai Samuel

Academic Qualification:

- MPhil (MAE), 1999
- BEng (MAE), 1997

Current Post and Institution:

- Manager, Systems Analysis, Intuitive Surgical, Inc., USA

Dr. Samuel Au received his BEng and MPhil degrees in MAE Department from CUHK in 1997 and 1999, respectively. He completed his PhD degree in Mechanical Engineering at MIT, USA, in 2007. During his PhD study, he co-invented (with Prof. Hugh Herr) the robotic ankle-foot prosthesis, which mimics the action of a biological ankle and, for the first time, provides transtibial amputees with a natural gait. This invention was named one of the Best Invention of Year by TIME magazine in 2007 and was later commercialized by iWalk, Inc.

Dr. Au joined Intuitive Surgical, Inc. in 2008 and now is the manager of Systems Analysis, leading the software and control development for the SingleSite product line. At Intuitive Surgical, he co-invented/developed the FDA Approved daVinci Single-Site surgical platform, which enables the operation of the single incision surgery using the daVinci surgical system. Dr. Au is the author/co-author of over 12 peer-reviewed manuscripts and conference journals, and has more than 15 patents pending. He has won numerous awards including the First Prize of the ASME Student Mechanism Design Competition in 2007, 2010 ISI Problem Solving Award, and 2011 ISI Inventor Award.



Prof. CHEN Tianshi

Academic Qualification:

- PhD (ACAE), 2008

Current Post and Institution:

- Assistant Professor, Linköping University, Sweden

Prof. Tianshi Chen was born in China in November 1978. He received his BE and ME degrees from Harbin Institute of Technology in 2001 and 2005, respectively, and PhD degree from The Chinese University of Hong Kong in December 2008. From April 2009 to March 2011, he was a postdoctoral researcher in the Division of Automatic Control, Department of Electrical Engineering, Linköping University, Linköping, Sweden. Since April 2011, he has been an Assistant Professor in the Department of Electrical Engineering, Linköping University. He has been mainly working in the area of system identification, statistical signal processing, machine learning, nonlinear control and their applications. His current research interests include machine learning methods for system identification, state inference with particle filters and constraints, and control of nonlinear feedforward systems and their applications.



Prof. CHAN Ho Man Rosa

Academic Qualification:

- BEng (ACAE), 2003

Current Post and Institution:

- Assistant Professor, City University of Hong Kong, Hong Kong

Prof. Rosa H.M. Chan received the BEng (1st Hon.) degree in Automation and Computer-Aided Engineering and a minor in Computer Science from CUHK in 2003. After graduation, she spent a year researching the manipulation of carbon nanotubes using dielectrophoretic force in the CUHK Center for Micro and Nano Systems led by Prof. Wen J. Li. She was later awarded the Croucher Scholarship and Sir Edward Youde Memorial Fellowship for Overseas Studies in 2004. During her graduate studies at the University of Southern California (USC) Center for Neural Engineering (CNE) led by Prof. Theodore W. Berger, Rosa and her colleagues were developing neural prostheses for damaged cognitive function resulting from injury or diseases such as Alzheimer's. In the summer of 2010, she was awarded Google Scholarship and participated in the Singularity University Graduate Studies Program at NASA AMES. She received her PhD degree in Biomedical Engineering in 2011 at USC, where she also received her MS degrees in Biomedical Engineering, Electrical Engineering, and Aerospace Engineering. Prof. Chan is currently an Assistant Professor in the Department of Electronic Engineering at City University of Hong Kong. Her research interests include neural prosthesis, computational neuroscience, and brain-machine interface.



Prof. CHEN Zhiyong

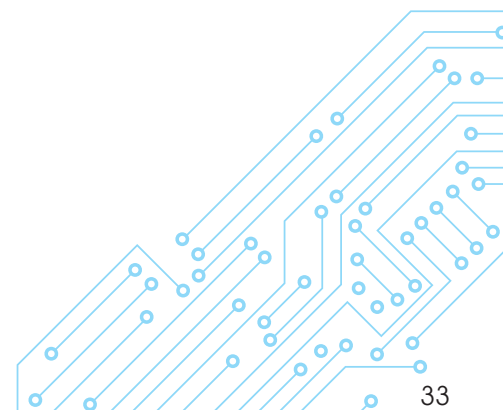
Academic Qualification:

- PhD (ACAE), 2005
- MPhil (ACAE), 2002

Current Post and Institution:

- Associate Professor, University of Newcastle, Australia

Prof. Zhiyong Chen received his MPhil and PhD degrees from The Chinese University of Hong Kong (CUHK) in 2002 and 2005, respectively. He worked as a Research Associate at the University of Virginia during 2005 to 2006. He is now an Associate Professor at the University of Newcastle. He is an Associate Editor for IEEE Transactions on Automatic Control. His research interests include nonlinear systems and control, networked systems, and biological systems. He is the recipient of several awards including the Best PhD Thesis Award (Engineering, CUHK), National Natural Science Award of China, and several international conference best paper awards.



Outstanding Alumni



Dr. DAI Ruoli Tristan

Academic Qualification:
- PhD (ACAE), 2007
- MPhil (ACAE), 2004
Current Post and Institution:
- Chief Technology Officer,
Noitom Technology Limited

Dr. Ruoli Dai graduated from the University of Science and Technology of China with Bachelor's degree in Engineering in 2002; and subsequently obtained his MPhil and PhD from The Chinese University of Hong Kong in 2004 and 2007, respectively. He is the co-founder of NOITOM Ltd and serving as CTO, also a member of SPIE and ASME.

Dr. Dai possesses rich experience in developing cutting-edge technologies, with R&D focus on motion capture technology; motion sensing/interactive technology; virtual reality technology; wearable device, etc. Dr. Dai has numerous publications in international academic journals and conferences; co-authored a book in the field of smart materials; and has more than a dozen patents. The "wireless high-speed full-body motion capture system", developed under his leadership, reached top international standards; it is an influential product in fields such as film-making (special effects), animation and game interaction.



Prof. DING Dan

Academic Qualification:
- PhD (MAE), 2001
Current Post and Institution:
- Associate Professor,
University of Pittsburgh, USA

Prof. Dan Ding is an Associate Professor in the Department of Rehabilitation Science and Technology (RST) at the University of Pittsburgh, and a Research Scientist at the Human Engineering Research Laboratories (HERL) at the VA Pittsburgh Healthcare System. She also holds secondary appointments in the Department of Bioengineering, and McGowan Institute for Regenerative Medicine at the University of Pittsburgh. Prof. Ding received her PhD degree in Mechanical and Automation Engineering from The Chinese University of Hong Kong in 2001. She had her postdoctoral training in rehabilitation engineering from 2002 to 2004. Prof. Ding has extensive experience in developing sensor-driven health applications and assistive robotics for people with disabilities. Prof. Ding was the recipient of the National Institute Disability and Rehabilitation Institute's Switzer Fellowship in 2004 and the Paralyzed Veterans of America (PVA) Research Fellowship in 2005. Prof. Ding has authored or co-authored over 120 peer-reviewed journal publications, proceedings and book chapters. She has advised or co-advised 3 postdoctoral fellows, 15 Masters and PhD students, and over 30 undergraduate students.



Prof. HU Xiaolin

Academic Qualification:
- PhD (ACAE), 2007
Current Post and Institution:
- Assistant Professor,
Tsinghua University, China

Prof. Xiaolin Hu received the BE and ME degrees in Automotive Engineering from Wuhan University of Technology, Wuhan, China, and the PhD degree in Automation and Computer-Aided Engineering from The Chinese University of Hong Kong, Hong Kong, China, in 2001, 2004 and 2007, respectively. During 2007 to 2009, he was a postdoc at the Department of Computer Science and Technology, Tsinghua University, Beijing, China. After that, he joined the Department as an Assistant Professor. In 2014, he was promoted to an Associate Professor. He was awarded Excellent Postdoc of Tsinghua University in 2009 (9 awardees in that year), and First Prize of Natural Science Award by the Ministry of Education of China (the third recipient) in 2012. He is now a Senior Member of IEEE and an Associate Editor of IEEE Transactions on Neural Networks and Learning Systems. His current research interests include artificial neural networks and computational neuroscience.



Prof. KWOK Ka Wai

Academic Qualification:
- BEng (ACAE), 2003
- MPhil (ACAE), 2005
Current Post and Institution:
- Assistant Professor,
The University of Hong Kong, Hong Kong

Prof. Ka-Wai Kwok completed the PhD training in The Hamlyn Centre for Robotic Surgery, Imperial College London in 2011, where he continued research on surgical robotics as a Postdoctoral Fellow. Prof. Kwok was the recipient of the Croucher Foundation Fellowship 2013, which supported his research jointly hosted by The University of Georgia and Harvard Medical School. In 2013, Prof. Kwok has also been appointed as Assistant Professor in the Department of Mechanical Engineering at The University of Hong Kong. His research interests focus on Image-guided and robot-assisted surgery. Prof. Kwok's ultimate research objective is to bridge the technical gap between medical imaging and surgical robotic control. He currently engages in advancing catheter navigation system, as well as fast imaging registration techniques for cardiovascular electrophysiology therapy, which is a minimally invasive treatment to heart rhythm disorders (arrhythmia). Apart from academic research, he is also keen on teaching and sharing study experiences with students. He obtained two Excellent Tutor Awards sequentially whilst pursuing his postgraduate study in CUHK.





Prof. LAI Wai Chiu King

Academic Qualification:

- PhD (ACAE), 2005
- MPhil (ACAE), 2002
- BEng (MAE), 2000

Current Post and Institution:

- Assistant Professor,
City University of Hong Kong, Hong Kong

Prof. King Lai is currently an Assistant Professor in the Department of Mechanical and Biomedical Engineering at City University of Hong Kong. He received his BEng degree in MAE, MPhil and PhD degrees in ACAE from CUHK. After graduation, he worked as a postdoctoral researcher in the Electrical and Computer Engineering Department at Michigan State University, USA.

He is now leading a team of researchers in developing nanorobotic and nanomanufacturing technologies for various nanodevices. His main research interests include development of micro/nano sensors/devices using MEMS and nanotechnology; photovoltaics; bio-nanotechnology; micro-/nano-manipulation and scanning probe microscopy. He has authored/co-authored more than 80 peer-reviewed journals, conference papers and book chapters in the field of micro/nano-manipulation, nanorobotics and MEMS devices. His papers were nominated as the Best Conference Paper in international conferences (IEEE-Nano 2013, IEEE-NEMS 2010, ICIMA 2004). He also served as Local Arrangement Chair for ICRA 2014, Finance Chair for IEEE-Nano 2013, Organizing Committee Chair for IEEE NMDC 2009 and 2010, and IEEE/RSJ IROS 2009 and Technical Session Chair for various international conferences.



Prof. LAM Hiu Wai Raymond

Academic Qualification:

- MPhil (ACAE), 2005
- BEng (ACAE), 2003

Current Post and Institution:

- Assistant Professor,
City University of Hong Kong, Hong Kong

Prof. Raymond H.W. Lam is currently working as an Assistant Professor in the Mechanical and Biomedical Engineering Department in City University of Hong Kong since September 2011. He holds a first honor BEng degree (2003) and an MPhil degree (2005) in Automation and Computer-Aided Engineering from The Chinese University of Hong Kong, and a PhD degree (2010) in Mechanical Engineering from Massachusetts Institute of Technology. After graduation, he worked as a postdoctoral fellow in Mechanical Engineering Department in University of Michigan from September 2010 to August 2011. Besides the achievement on academic publications, he obtained various awards including the champion of Institute of Electrical and Electronic Engineers (IEEE) graduate student paper contest for the Asia-Pacific region in 2005, and the Croucher Foundation Scholarship for 2005 to 2008. Prof. Lam has interdisciplinary research experience in cell mechanobiology, bacteriology, microfluidics, microfabrication, computational methods, software development and circuit/device design. His overall research objective is to bridge science and engineering knowledge, and currently he aims at developing/applying microengineering techniques to advance the cell biology research.



Dr. LAM Hiu Fung Alan

Academic Qualification:

- PhD (ACAE), 2004
- MPhil (MAE), 2001
- BEng (MAE), 1999

Current Post and Institution:

- Chairman and Chief Executive Officer,
Sengital Limited, Hong Kong

Dr. Alan Lam received his BEng and MPhil degrees from the Department of Mechanical and Automation Engineering. He obtained his PhD degree specializing in systems integration with focus on MEMS sensing systems. He is the inventor of VRMS, and the leader of the VRMS technology team.

Dr. Lam is active in academic aspect in Hong Kong. He supervised over 300 students over past 10 years and currently is the external program board member of Shatin IVE Electronic Engineering Department, adjunct professor and advisory board member of Department of Electronic Engineering of City University of Hong Kong. On industrial side, he is the committee member of HKPKI forum, the member of IEEE, graduate member of HKIE, professional member of HKIA and member of HKETA.

Dr. Lam is one of the founders of Sengital Ltd. and is now working as the Chief Executive Officer. Currently, Sengital is the corporate member of Hong Kong Medical and Healthcare Device Industries Association; corporate member of HKEIA, corporate member of HKCA tenant of Hong Kong Science Park and associate member of ZigBee Alliance.



Prof. LAM Miu Ling

Academic Qualification:

- PhD (ACAE), 2008
- MPhil (ACAE), 2002
- BEng (MAE), 2000

Current Post and Institution:

- Assistant Professor,
City University of Hong Kong, Hong Kong

Prof. Miu Ling Lam received her PhD at CUHK with a focus on wireless sensor network deployment using mobile robots under the supervision of Prof. Liu Yun-hui. Her research at CUHK also includes multifingered robotic grasp and artificial neural network. From 2008 to 2010, she was a Croucher Postdoctoral Fellow in the California NanoSystems Institute at University of California Los Angeles (UCLA), USA specializing in Bioinformatics. She is currently an Assistant Professor in School of Creative Media at City University of Hong Kong. Her current research focuses on cloud robotics, RGB-D perception, wearables and interactive media.

Prof. Lam is also an active New Media Artist. She exploits cutting-edge technologies to create artworks at the intersection of art, science and engineering. Her artworks have been shown in major festivals and exhibitions locally and internationally.

Outstanding Alumni



Prof. LIU Lu

Academic Qualification:

- PhD (ACAE), 2008
- MPhil (ACAE), 2005

Current Post and Institution:

- Assistant Professor,
City University of Hong Kong, Hong Kong

Prof. Lu Liu received both her MPhil and PhD degrees in the Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong, Hong Kong, in 2005 and 2008, respectively. From 2009 to 2012, she was an Assistant Professor in the Department of Information Physics and Computing, The University of Tokyo, Japan, and then a Lecturer in the Department of Mechanical, Materials and Manufacturing Engineering, The University of Nottingham, United Kingdom. She is currently an Assistant Professor in the Department of Mechanical and Biomedical Engineering, City University of Hong Kong, Hong Kong. Her research interests are primarily in networked dynamical systems, control theory and applications and biomedical devices. She received the Best Paper Award (Guan Zhaozhi Award) in the 27th Chinese Control Conference in 2008.



Prof. SHEN Yantao

Academic Qualification:

- PhD (MAE), 2002

Current Post and Institution:

- Associate Professor,
University of Nevada, USA

Prof. Shen received his Ph.D. degree specializing in sensor-based robot control systems from The Chinese University of Hong Kong in 2002. He is currently an Associate Professor in the Department of Electrical and Biomedical Engineering of University of Nevada, Reno (UNR). Prior to joining UNR, Prof. Shen was a Research Associate in the Department of Electrical and Computer Engineering, Michigan State University. His current research interests include Bio-mechatronics/-robotics, Bioinstrumentation, Sensors and Actuators, and Tactile/Haptic Interfaces. Prof. Shen has authored-coauthored one book chapter and over 90 peer-reviewed journal and conference papers, and co-holds four US patents. He was also a finalist of Best Vision Paper Award in the 2001 IEEE ICRA, a finalist of Best Paper Award in the 2007 IEEE RO-MAN, and a winner of the T. J. Tarn Best Paper Award in the 2009 IEEE ROBIO. Prof. Shen's research has been funded by federal agencies such as the National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), as well as the state and local agencies. In addition, he is a recipient of NSF CAREER Award and the UNR IEEE Outstanding Electrical Engineering Professor (2010, 2011).



Prof. SONG Jingyan

Academic Qualification:

- PhD (Robotics and Automation, SE), 1999

Current Post and Institution:

- Professor, Tsinghua University, China

Prof. Jingyan Song has been working in the Department of Automation at Tsinghua University after graduation from CUHK since 1999. He is now Professor in the Department of Automation of Tsinghua University. Due to his outstanding work, he received the Best Teacher Awards in 2000, 2001, and 2006. This award is one of the highest rank awards for staff at Tsinghua University. His research has been in the areas of robotics and human interface, and their applications in transportation and industry. He got lots of research achievements in the area of system modeling, data fusion, signal management, and traffic flow theory etc. In industrial application, his research group worked on the area of data acquisition and distribution, vehicle electrical devices, traffic image analysis device and pattern reorganization. Most of them have been used to solve the real problems in China. In these past years, his research also focused on the theory and application of space robot.



Prof. SUN Dong

Academic Qualification:

- PhD (Robotics and Automation, SE), 1997

Current Post and Institution:

- Chair Professor and Head,
Department of Mechanical and
Biomedical Engineering,
City University of Hong Kong, Hong Kong

Prof. Dong Sun is currently a Chair Professor and Head of the Department of Mechanical and Biomedical Engineering, City University of Hong Kong (CityU). He received his PhD degree from The Chinese University of Hong Kong in 1997, and then joined the University of Toronto, Canada for his post-doc research. He returned to Hong Kong in 2000 to start his academic career in CityU. He has gained international reputation through his pioneering works in robotics and the related biomedical engineering. He has published 2 books and 300 technical articles in referred journals and conference proceedings, and held 5 patents. He has succeeded applications for many key grants in Hong Kong such as CRF. He has received numerous best paper awards, as well as industrial awards such as Hong Kong Awards for Industry (2003 & 2012). Prof. Sun has also made great contributions to his community through organizing international conferences as the General Chair, editorial services for prestigious journals, and serving the Engineering Panel of Hong Kong RGC for GRF and RAE.



Mr. WONG Chi Yin Joe

Academic Qualification:

- BEng (ACAE), 2004

Current Post and Institution:

- Chief Executive Officer,
Medisen Limited, Hong Kong

Mr. Joe Wong received his BEng in the Department of Automation and Computer-Aided Engineering from The Chinese University of Hong Kong (CUHK) in 2004. During his study in CUHK, Mr. Wong won several Institute of Electrical and Electronics Engineers (IEEE) competitions: the Second Prize of IEEE Hong Kong Section 2003 Undergraduate Student Paper Contest, the Third Prize of IEEE Region 10 Student Paper Contest 2004 (Undergraduate Section) and the Second Prize of the IEEE Best Final Year Project Competition 2004 (Hong Kong). Mr. Wong started his career in Sengital Limited since 2004. He joined and played a key role in the company when it has first started up. He became Chief Operating Officer (COO) from 2009 to 2013. He currently is the CEO in Medisen Limited and his business is mainly focusing on Medical and Healthcare product design and development. Mr. Wong led his team to win the Gold Medal in International Exhibition of Inventions of Geneva 2014.



Prof. WONG Pak Kin

Academic Qualification:

- BEng (MAE), 1999

Current Post and Institution:

- Associate Professor,
The University of Arizona, USA

Prof. Pak Kin Wong is an Associate Professor in the Department of Aerospace and Mechanical Engineering. He is also affiliated to the Biomedical Engineering Department, Agricultural and Biosystems Engineering Department, Southwest Environmental Health Sciences Center and Bio5 Institute at the University of Arizona. He received his BEng from the Department of Mechanical and Automation Engineering in The Chinese University of Hong Kong in 1999 and PhD from the University of California, Los Angeles in 2005. He is an editor of the IEEE Nanotechnology Magazine. He has published over 60 peer-reviewed journal articles in the area of nanotechnology and biomedical engineering, and is an inventor of two issued or pending patents. His current research interest focuses on mechanoregulation of tissue morphogenesis and electrokinetic manipulation for clinical diagnostics. Among other honors, Prof. Wong was awarded the NIH Director's New Innovator Award in 2010, Arizona Engineering Faculty Fellow in 2011, AAFSAA outstanding Faculty Award in 2013, and JALA 10 - A Top 10 Breakthrough in Innovation in 2014.



Prof. WONG Tak-Sing

Academic Qualification:

- BEng (ACAE), 2003

Current Post and Institution:

- Assistant Professor,
The Pennsylvania State University, USA

Prof. Tak-Sing Wong is currently an Assistant Professor of Mechanical Engineering in the Department of Mechanical and Nuclear Engineering at The Pennsylvania State University, University Park, USA. Prior to joining Penn State, he was the Croucher Foundation Postdoctoral Fellow in the Wyss Institute for Biologically Inspired Engineering at Harvard University. Prof. Wong's current research focuses on micro/nanoengineering, interfacial phenomena, and biologically inspired engineering with applications in materials science, energy and health. His research has collectively led to >25 peer-reviewed publications, including papers in Nature, Nature Materials, Nature Communications, and the Proceedings of National Academy of Sciences, USA (PNAS). Prof. Wong has served as a guest editor for MRS Bulletin on topics related to interfacial materials with special wettability. Prof. Wong was a recipient of the NSF CAREER Award (2013), the R&D 100 Award (2012), Best Inventions of Biomimicry (2011), the Croucher Foundation Postdoctoral Fellowship (2010 - 2012), the Intel Foundation PhD Fellowship (2007 - 2009), and a number of best paper awards from IEEE. Prof. Wong's research has been featured in a number of international news outlets, including BBC, PBS NOVA, Reuters, The Times, The Wall Street Journal, and Nature.



Dr. YEUNG Wai Leung Steve

Academic Qualification:

- PhD (MAE), 1997

Current Post and Institution:

- Chief Executive Officer,
iView Limited, Hong Kong

Before founding iView, Dr. Steve Yeung served a Hong Kong listed company where he headed research and development department from 1999 and served as CTO until 2007. Dr. Yeung managed the commercialization of first outdoor bistable billboard display, followed by the mass volume production of the display technology for application in consumer electronics. He authored over 30 publications in various journals and holds patents in display technologies including LCD, bistable displays, and microdisplays. iView Limited is a leading picoprojection module maker. The company was awarded the Grand Award, Technological Achievement, Hong Kong Awards for Industries 2013.



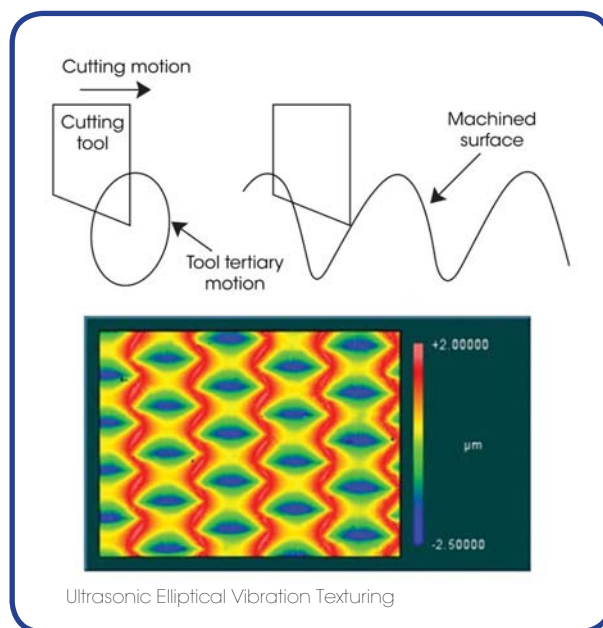
Research Activities

Advanced Integrated Manufacturing Laboratory

<http://www.mae.cuhk.edu.hk/~aiml>

Lab Director: Professor GUO Ping

The Advanced Integrated Manufacturing Laboratory commits to research and development of next-generation manufacturing processes. Our mission is to enhance fundamental understandings of mechanics and principles of the new processes; to achieve technological advances in machine tool design and control; and to explore new applications in energy, health care, automobile and aviation sectors. Current research activities include: Ultrasonic Elliptical Vibration Texturing – a vibration-assisted machining technique for fast generation of micro-structured surfaces; and 3D e-Writing – a promising micro-additive manufacturing process based on the principle of near-field electrospinning.



Advanced Nanomaterials and Micromachines Laboratory

Lab Director: Professor ZHANG Li

The Advanced Nanomaterials and Micromachines Laboratory (ANML) is dedicated to an interdisciplinary research programme that bridges micro-/nanotechnology and functional materials with MEMS and robotics technology at small scales. The primary research objectives of the Laboratory range from development of functional nanomaterials to intelligent micro-/nanoscale machines and robotic systems for biomedical, energy storage and environmental applications. The motivation of our research is to develop enabling materials, tools and systems, and technologies for the sustainable society and a better life. Current on-going projects in ANML include: microrobotic platform project – design and development of non-contact tweezing techniques for cell manipulation and minimally invasive medicine; biologically inspired swimming micromachines – remotely controlled microrobotic tools for biomedical applications; and the development of supercapacitors, energy storage devices, for portable and/or flexible electronic systems. The laboratory was founded in 2012, and the research activities have been sponsored by the Hong Kong Research Grants Council (RGC), the Innovation and Technology Fund (ITF), the Shun Hing Institute of Advanced Engineering of CUHK, the United College of CHUK, and the National Natural Science Foundation of China (NSFC).



Powering a DC Motor with a Supercapacitor (Zhang et al., Nano Energy, 7, 42-51, 2014)



Electromagnetic Coils Setup for Remote-control of Micromachines

Advanced Robotics Laboratory

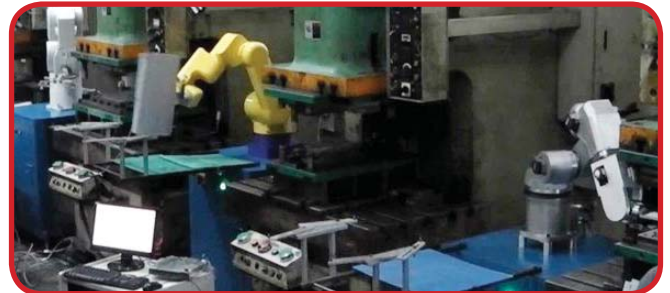
<http://arl.mae.cuhk.edu.hk>

Lab Director: Professor XU Yangsheng;

Lab Deputy Director: Professor QIAN Huihuan

The Advanced Robotics Laboratory (ARL) was established in 1997, with the aim to conduct researches with impact to the society in areas including robotics, intelligent systems, and electrical vehicles. We have been passionately extending our research efforts in space robotics, service robotics, industrial robotics, dynamically stabilized systems, learning, wearable interfaces, video surveillance, energy and battery management, and hybrid electric vehicle. Most recently, we have been working on the highlighted projects:

- 1) automated guided vehicle (AGV), with multi-sensory, omni-directional, intelligent and networked features to serve the industry sector;
- 2) tree climbing robot, named Treebot, with optimized gripping capability, dynamic motion, and automatic navigation on trees;
- 3) micro hybrid powertrain system which provides a solution to the energy and environmental protection problem in an cost-effective manner by automatically turning off idling engines;
- 4) interactive robot for treatment of dementia, which will help provide nursing assistance to the elderlies.



Industrial Robot



Treebot



Omni-directional Vehicle



Applied Control and Computing Laboratory

<http://www.mae.cuhk.edu.hk/~accl>

Lab Director: Professor HUANG Jie

The Applied Control and Computing Laboratory (ACCL), established in 1998, aims to provide a competitive environment for self-motivated researchers to conduct first class research in control and automation. The Laboratory has conducted over 20 research projects sponsored by the Hong Kong Research Grants Council, and the National Science Foundation of China, and has collaborated with Tsinghua University, and Institute of Mathematics and System Science on one National-973-Project. The research activities conducted in this Laboratory have led to numerous national and international awards and honors including the Second Prize of China State Natural Science Award, Senior Croucher Fellowship Award. So far, 17 PhD students and 12 MPhil students have studied in this Laboratory, with 12 received PhD degree and 12 MPhil degree. Among 12 graduated PhD students, one is now a senior consultant at Nalco, Houston TX, USA; one is postdoctoral fellow with Royal University of Sweden, and the other 10 are all faculty members of reputable universities in China or overseas such as University of New Castle, Australia, City University of Hong Kong, and Linkoping University, Sweden.

Currently, the Laboratory is conducting four projects for the Hong Kong Research Grants Council and one project for the National Science Foundation of China.



Prof. Huang together with some of his current and former PhD students in Nanjing on July 28, 2014 during The 23rd Chinese Control Conference, Nanjing, China, July 28-30, 2014.



Research Activities

Biomaterials and Stem Cell Tissue Engineering Laboratory

<http://www.mae.cuhk.edu.hk/~lbian/index.html>

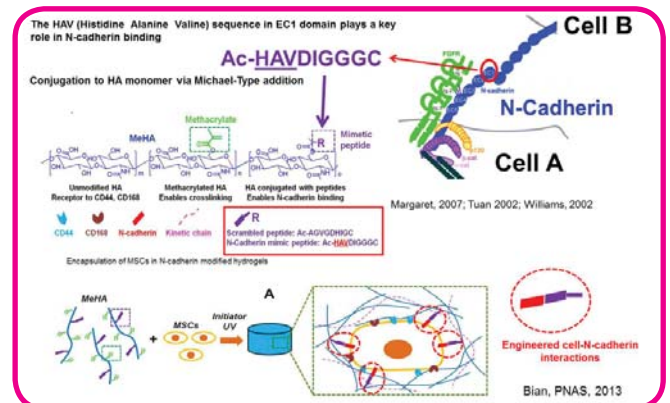
Lab Director: Professor BIAN Liming

The Biomaterials and Stem Cell Tissue Engineering Laboratory (BSCTEL) is dedicated to the development of novel biomaterials for assisting biological studies and enhancing clinical therapies. Specific research directions include:

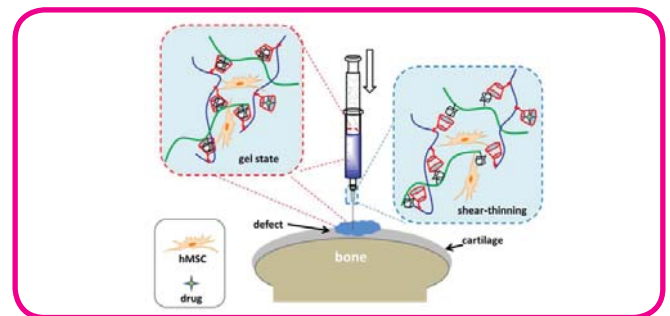
- 1) biofunctional materials presenting micro-environmental cues to regulate stem cell behaviors;
- 2) physical/chemical functional biomaterials as cell/drug carriers for musculoskeletal repair;
- 3) nanomaterials as drug/gene delivery vehicles for musculoskeletal tissue repair and generation and nanomaterials as molecular biosensors for disease diagnosis.

The second mission of the BSCTEL is to develop strategies for stem cell based tissue engineering. Specific research directions include:

- 1) investigate the role of microenvironment cues including mechanical forces, cell-scaffold interactions and biochemical factors on cellular function, tissue structure and development;
- 2) explore the regulatory mechanisms of musculoskeletal tissue mineralization;
- 3) advance stem cell-based tissue engineering technologies for musculoskeletal tissues.



Biomimetic hydrogel to promote stem cell differentiation



Injectable hydrogel for cartilage repair

Biomechanics and Mechanobiology Laboratory

Lab Director: Professor MAK F.T. Arthur

Multiscale Mechanics in Tissue Damage and Regeneration

Deep tissue injury due to prolonged excessive skin loadings can lead to clinical pressure ulcers, affecting millions of persons with physical disability. How skin loadings are transmitted to deep tissues, and how stresses at the tissue level invoke cellular damages require objective-specific in-silico simulations, as well as careful in-vivo and in-vitro studies. Damages continue to build up for days after loading cessation before repair processes finally catch up. We use computer models to simulate the propagation of deep tissue injury towards the skin surface under prolonged and repeated loadings, and to investigate the effects of cushion stiffness and patient turning patterns on such damage evolution. We use an indentation approach to assess the duration-dependent damage thresholds of cells in compression, and the effects of oxidative stress on such thresholds. We study the effects of oxidative stress on cytoskeletal polymerization and use atomic force microscopy to study the corresponding cell stiffness. We use femtosecond laser to evaluate how oxidative stress affects the pre-tension in the cytoskeletal fibers and the ability of cells to repair laser-generated nano-pores on their plasma membranes. Our findings suggest interesting implications of damage vulnerability at the cellular level under prolonged oxidative exposure during chronic inflammation at the tissue level.



Prof. Mak with his team of research staff, graduate students and summer interns working together in the area of multiscale biomechanics and mechanobiology

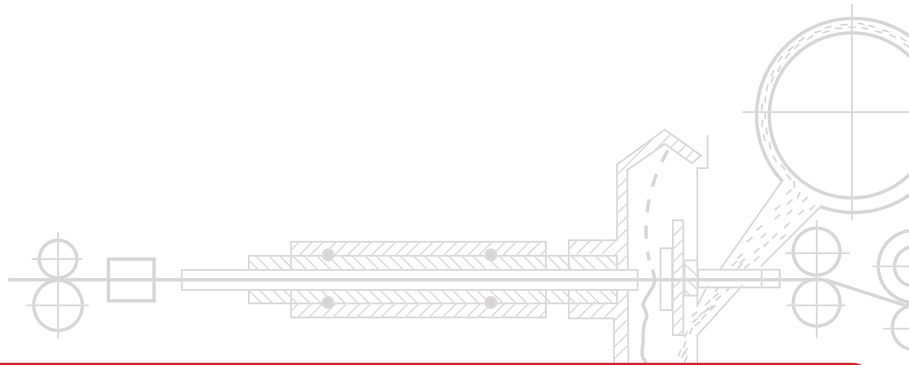


Computational Intelligence Laboratory

<http://www.mae.cuhk.edu.hk/~cil>

Lab Director: Professor WANG Jun

Computational intelligence is an emerging research area involved with neural networks, fuzzy systems, evolutionary computation, and their diversified applications. The Computational Intelligence Laboratory hosts a team of active researchers (postdoctoral fellows, research associates, and postgraduate students) led by Professor Jun Wang, engaging in in-depth investigations of theory and methodology of intelligent systems and their scientific and engineering applications. The research projects include the analysis and design of recurrent neural networks for solving real-time optimization problems and their applications to vehicle routing in intelligent transportation systems, kinematic motion planning and control of redundant robot manipulators and grasping force optimization for multi-fingered robotic hands in intelligent robotic systems, robust pole assignment and model predictive control in intelligent control systems, blind source signal separation and data selection/clustering in intelligent information processing systems. The research projects were funded by the Hong Kong Research Grants Council, the National Natural Science Foundation of China, and industries. The research resulted in numerous publications in top tier journals and presentations at leading conferences. The graduates from the Laboratory are working in some top universities in Chinese academies and Fortune-500 high-tech companies in the world.

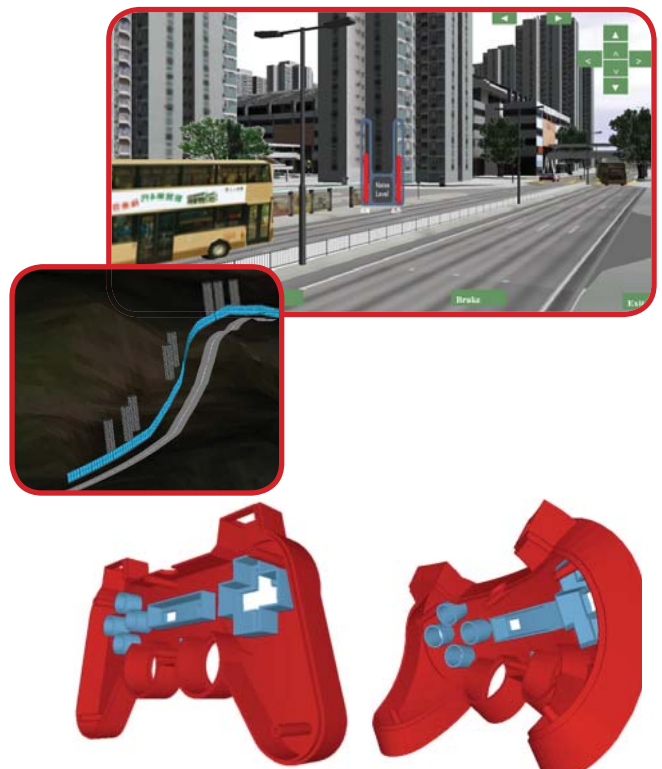


Computer-Aided Design Laboratory

<http://www.mae.cuhk.edu.hk/~cad>

Lab Director: Professor HUI Kin Chuen

The CAD laboratory specializes in developing techniques in computer graphics, geometric modeling, solid modeling, and virtual reality for design applications with special focus on environment related issue. This includes research into the construction of noise model for traffic noise estimation, and the simulation of traffic noise in a virtual environment. The noise model construction system takes into consideration of various parameters affecting the noise level (e.g. road path data, traffic flow data, etc.) in the construction of noise model that can be used for traffic noise estimation. This provides a design tool for the design of new buildings and road paths so that the impact of traffic noise can be reduced. Since traffic noise are usually measured in terms of decibel which may not be easily interpreted by the general public. Another research focus is to adopt virtual reality technique to reproduce the traffic noise in a simulated environment. This allows users to experience the traffic noise according to the estimated noise level. Another area of focus is the constrained deformation of 3D models. This includes the deformation of engineering components while retaining its functional features (e.g. cylindrical feature remains cylindrical). This is extended for retaining the surface area of an object which is essential for the design of containers in which volume can be reduced after use. This will contribute in reducing the amount of solid waste in the environment.

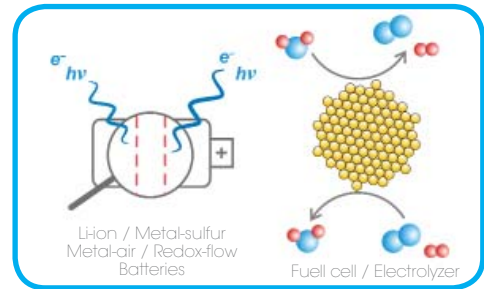


Research Activities

Electrochemical Energy and Interfaces Laboratory

Lab Director: Professor LU Yi Chun

The Electrochemical Energy and Interfaces Laboratory (EEL) is dedicated to the development of functional materials and efficient interfaces for cleaning energy storage and conversion. Ongoing research develops in EEL includes electrode and electrolyte design for high-energy lithium-ion, metal-sulfur and metal-air batteries; redox-active components and solution chemistry for redox-flow batteries; electrocatalysts and electrode design for low-temperature fuel cells and electrolyzers; mechanistic understanding of interfacial phenomena governing electrochemical energy conversion and storage processes. We study electrochemical interfaces including battery interfacial chemistry, electrocatalysis, and bioelectrochemical interfaces by employing spectroscopic and microscopic techniques coupled with in situ & ex situ electrochemical characterizations on model material systems. Applying insights gained from these mechanistic studies, we seek to develop material design principles for high-energy, efficient and long-lasting energy storage and conversion technologies for a sustainable energy future.



Research topics on battery interfacial chemistry and electrocatalysis



Research facility / battery cell apparatus

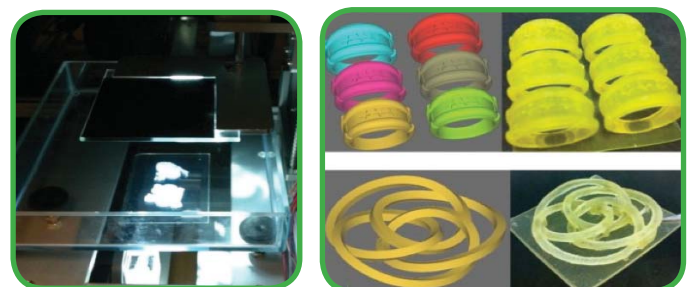
Geometric Design and Manufacturing Laboratory

Lab Director: Professor WANG C.L. Charlie

Geometric Design and Manufacturing Laboratory (GDML) is a research lab of the Department of Mechanical and Automation Engineering, led by Prof. Charlie C. L. Wang. We focus on the research of geometric computing for solving the problems of design and manufacturing, including design customization, design automation, design optimization, additive manufacturing, CNC machining, motion planning, as well as information retrieval and processing. Our research has made important contributions to the advancement in design automation of human-centered freeform products, GPU-based solid modeler, and geometric modeling for additive manufacturing.

The current on-going projects include:

- Design Automation of Customized Surgical Devices and Operations
- Hierarchical GPU-based Solid Modeling for Freeform Objects
- Fast and Non-layered Additive Manufacturing
- Real-time Body Motion Capturing and Modeling



Institute of Precision Engineering

<http://www.ipe.cuhk.edu.hk>

Lab Director: Professor DU Ruxu

The Institute of Precision Engineering was established in 2006. Its mission is to develop able precision engineering technologies for Hong Kong, Pearl River Delta region and the world. Supported by various grants from the Hong Kong Research Grants Council, Guangdong Science and Technology Funds, as well as private companies, currently the Institute is working on a number of practical technologies.

One of our current projects is robot fish. In nature, flapping is the most common form of propulsion in water for both fish and other aquatic animals. Inspired by nature, we designed a unique wire-driven mechanism and used it to build a number of robot fishes. Compared to the existing robot fishes, including the existing single-joint robot fish, multi-joint robot fish, and smart material based robot fish, our robot fish has several advantages including better resembling the fish flapping, easy to build, easy to control, and most importantly, very energy efficient. Our work have won a number of distinctions locally and globally, including the champion of CUHK Professor Charles K. Kao Student Creativity Awards, and the First Prize of 13th Challenge Cup – Chinese National Science and Technology Innovation Competition in 2013, and the finalist of the best paper in 2012 IEEE ROBIO. Presently, team up with the CUHK Jockey Club Minimally Invasive Surgical Skills Center, we are using this technology to build a miniature tadpole-like self-propelled endoscope for diagnosis of stomach cancer.

Our brother teams in mainland China include:

- Precision Engineering Research Center in Chinese Academy of Sciences Shenzhen Institutes of Advanced Technology;
- Advanced Materials Research Center in Chinese Academy of Sciences Shenzhen Institutes of Advanced Technology;
- Precision Engineering Research Center in Guangzhou Chinese Academy of Sciences Institute of Advanced Technology;
- Center in Guangzhou Chinese Academy of Sciences Institute of Advanced Technology.



Wire-driven Robot Fish with Pectoral Fins

Intelligent Control Systems Laboratory

<http://www.mae.cuhk.edu.hk/~icsl>

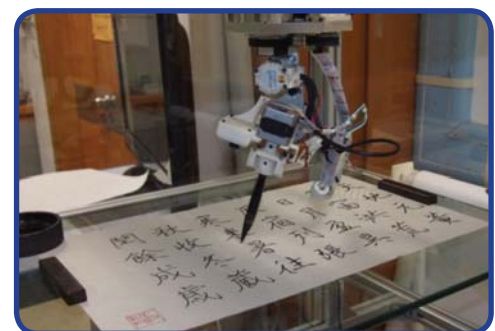
Lab Director: Professor YAM Yeung



The Intelligent Control Systems Laboratory (ICSL) is dedicated to the theoretical and experimental studies pertaining to the exhibition and emulation of human-like skills and intelligence. The Laboratory conducts research over a wide range of areas, such as system modeling and identification, computational-based control design, human

skill acquisition, intelligent learning, and mechanism design, with special focus on their complementary performance and integrated applications. ICSL supports the desires and needs in the modern world to have machines and devices that exhibit "human-friendly" interactions and capabilities. On-going projects in ICSL include:

- **REAP (Robotic Expressions of Acquired Penmanship)** - A robotic system with 6 DoFs brush-pen and developed algorithms to analyze, segment and replicate Chinese calligraphies and paintings, and to capture the skills of human execution and analyze their different styles.
- **Endoscopic Surgical Robot Project** - Development of a flexible robot with smart design and control capability fitting inside a hollow overtube within the latest commercially available endoscope to perform surgeries.



Robotic Execution of Chinese Calligraphy



Experiment Setup of an Endoscopic Surgical Robot

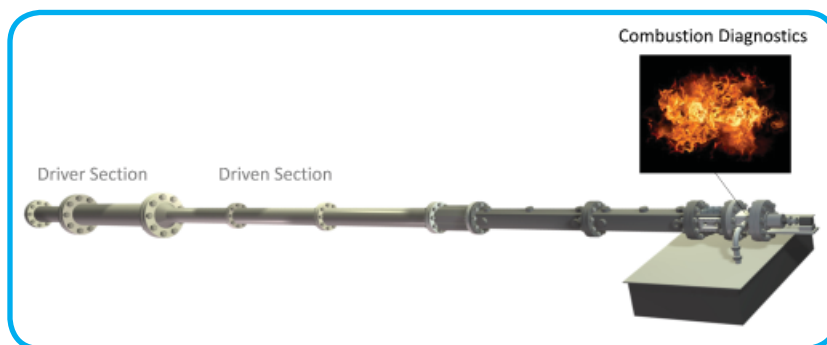
Research Activities

Laser Diagnostics and Combustion Laboratory

Lab Director: Professor REN Wei;

Energy Engineering Programme Director: Professor WONG King-Lap

The Laser Diagnostics and Combustion Laboratory (LDCL) was established recently in the MAE Department for the development of new laser-based diagnostic techniques and the fundamental research in the areas of combustion and pollution, alternative fuels, and environmental science to address various applications and sustainability issues in our industrial society. LDCL has two highly interdisciplinary research themes. First, the Laboratory conducts research in the development of trace gas sensor and instrumentation using state-of-the-art spectroscopy techniques such as cavity ringdown spectroscopy (CRDS), cavity enhanced absorption spectroscopy (CEAS), quartz-enhanced photoacoustic spectroscopy (QEPAS), wavelength and frequency modulation spectroscopy (WMS/FMS). Various laser systems with wavelength from ultraviolet to infrared are utilized to detect the significant gas species for applications in environmental monitoring, medical diagnostics, and industrial process control. Second, we perform fundamental studies of combustion chemical kinetics of all types of fossil fuels and biofuels using a world-class high-purity shock tube combined with various combustion diagnostic systems. The shock tube simulates what occurs in a piston engine without the complexities of fluid dynamics or heat transfer effects. It creates a very uniform test environment over a wide range of temperature (500–3000 K) and pressure (1–50 bar). This apparatus is ideal for the measurements of ignition delay times, species time-histories, reaction rate constants, and other high-temperature chemical processes. Our research can play an important role in the design of the next-generation combustion and propulsion systems, and the search for cleaner biofuel to replace traditional fossil fuel in various transportation vehicles.

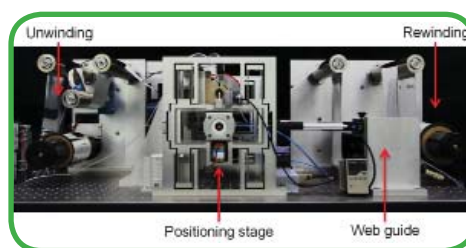


Shock tube facility and combustion diagnostics

Multiscale Precision Instrumentation Laboratory

Lab Director: Professor CHEN Shih Chi

The Multiscale Precision Instrumentation Laboratory is focused on generating new scientific knowledge required to design cutting-edge precision and optical instrumentations at various length scales for measuring, manipulating, visualizing, and manufacturing things at micrometer and nanometer scales. We use the principles of mechanical design, precision engineering, optics, chemistry, biology and manufacturing - in combination with invention - to create new models, tools, machines, and fabrications processes that accelerate discoveries in medicine and science. Highlights of our recent projects include the development of (1) the world's first nanometer level precision roll-to-roll printing system based on compliant mechanisms, (2) ultra-high-speed multi-photon microscope/endomicroscope systems for in vivo biomedical imaging and clinical applications, and (3) a droplet-based dielectrophoresis microfluidic platform for on-chip fabrication of nanomedicine for gene therapy.



Flexure-based R2R Printing System



Custom-designed High-speed Confocal Microscope

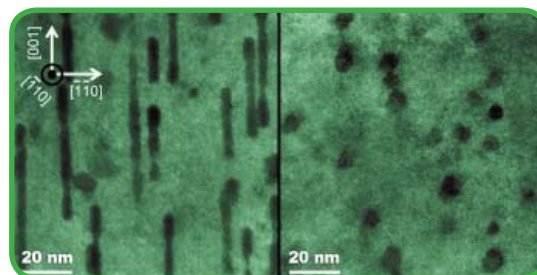


Droplet-based DEP Chip for Nanomedicine Fabrication

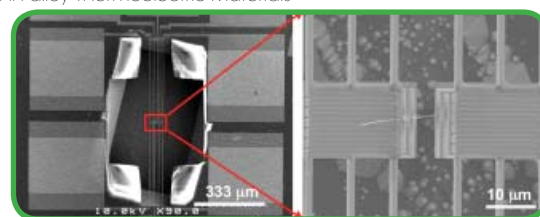
Nano Energy Research Laboratory

Lab Director: Professor XU Dongyan

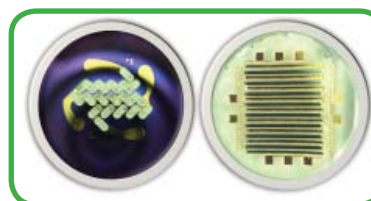
The Nano Energy Research Laboratory (NERL) is devoted to fundamentally understand energy and mass transport phenomena at the micro/nanoscale for advanced energy conversion and biomedical applications. Current research activities in the Laboratory are mainly in three research directions: **Thermoelectrics**, **Thermal Management**, and **Micro/nanofluidics**. For thermoelectric research, we mainly focus on development of efficient nanostructured thermoelectric materials, fundamental understanding of phonon and electron transport in nanostructured materials, and fabrication of thermoelectric devices for waste heat harvesting. In the area of thermal management, we will explore the boiling heat transfer limits with microstructured surfaces and also develop novel thermal interface materials with low thermal resistance. As to micro/nanofluidic research, we aim to develop novel micro/nanofluidic devices for biomedical applications.



Nanostructure-in-alloy Thermoelectric Materials



Thermoelectric Properties Characterization of Individual Nanoribbons



Design and Fabrication of Thermoelectric Devices

Networked Sensors and Robotics Laboratory

<http://www.mae.cuhk.edu.hk/~nsrl/>

Lab Director: Professor LIU Yun Hui

The Networked Sensors and Robotics Laboratory (NSRL) was established in 1995 to provide advanced facilities for the research and development of robotics and active sensor networks in Hong Kong. Our mission is to conduct the world-class fundamental research related to robotics and active sensor networks, and to explore novel applications of robotics technologies in manufacturing, service, health care, and our daily life. The research projects being undertaken include vision-based control of robotic systems, medical robotics, internet-based robotics, grasping analysis and synthesis of multi-fingered hands, deployment and target tracking of active sensor networks, and biomedical engineering. The research activities have been widely sponsored by the Hong Kong Research Grants Council, the Innovation and Technology Fund, the Quality Education Fund, the National Natural Science Foundation of China, the Chinese High-Tech 863 programme, and industries in Hong Kong and the Mainland China. We have developed the first robot for delivering medical devices and documents in hospitals in Hong Kong and the world first force-reflecting Internet-based robotics system with collaboration with Michigan State University and Chinese Academy of Sciences. Our research has made important contributions to the research advancement in grasp analysis and synthesis, vision-based control, internet robotics and medical robots. Current on-going projects include: vision-based localization and control of mobile robots and aerial robots; assistive surgical robots for helping surgeons in nasal surgery and minimal invasive hysterectomy; internet-based robotics for on-line robot design and education, robot formation control for active sensor networks, and high throughput 3D imaging systems for flowing cells. Our works have been awarded many times by renowned professional societies such as IEEE, Robotics Society of Japan, etc. Most of the PhD graduates from our Laboratory have become faculty members at universities in US, Canada, Hong Kong and China.



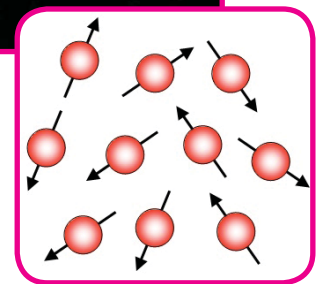
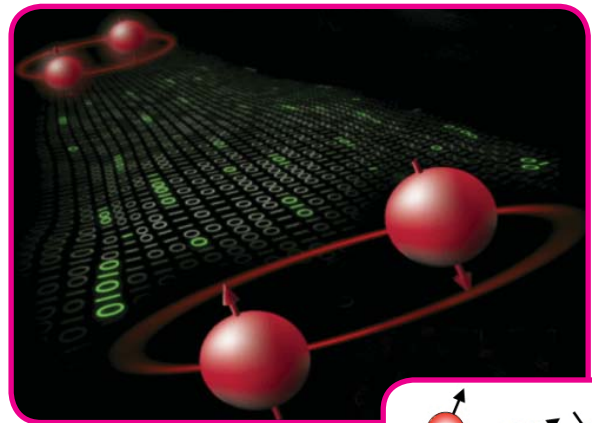
Research Activities

Quantum Control and Quantum Technology Laboratory

Lab Director: Professor YUAN Haidong

Modern scientific inquiry and the demands of advancing technology are driving us into a new technological era in which we are able to build systems whose performance is limited by quantum physical effects and in which it may be possible to exploit non-classical phenomena in novel ways. To this end, compelling applications for control of quantum systems have been noted and have motivated seminal studies in such wide-ranging fields as quantum computation, metrology, chemistry, optical networking and computer science. At the heart of quantum technology is the development of a quantum control theory, which is the research of Quantum Control and Quantum Technology Lab. Currently our research focuses on:

- time optimal control of quantum systems
- decoherence control
- modeling and control of systems at micro, nano and mesoscopic scale: spin dynamics, control of coherent spectroscopy, Ion trap, superconducting quantum interference devices, etc.
- quantum information processing and its relevance to quantum control



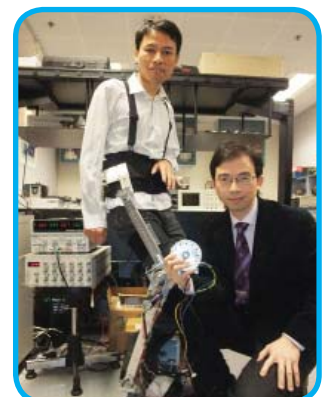
Smart Materials and Structures Laboratory

<http://www.mae.cuhk.edu.hk/~sms>

Lab Director: Professor LIAO Wei Hsin

Smart materials are those that alter their shape, stiffness or other properties when they are subjected to changes in temperature, electrical or magnetic field. By utilizing the coupling features, smart materials can be built as sensors and actuators. Integrated with controllers, such systems perform work like nerves, muscles, and brains in our human bodies. These adaptive properties give rise to many promising applications and scientific research opportunities, which involve materials, mechanics, electronics, and control. The Smart Materials and Structures (SMS) Laboratory is well equipped with experimental and computational facilities for the research and development of smart materials, adaptive structures, and intelligent systems. At SMS Laboratory, students and research staff work closely in the discovery, design, analysis, and implementation of smart devices for enhancing the adaptability and functionality of intelligent systems. We are engaged in the areas of energy harvesting, vibration control, exoskeleton, mechatronics, precision machinery, nanotechnology, and medical devices.

The work done at SMS Laboratory has been well recognized. Significant results have been obtained and published as technical papers in international journals and conference proceedings, book chapters, as well as patents. Our members have received numerous awards including Gold Award, Best Automobile Project of the Year 2000; Best Final Year Project 2002; Champion, Postgraduate Individual Projects, VC Cup for Student Innovation (VCCI) 2005; T A Stewart-Dyer/F H Trevithick Prize, awarded by Railway Division of the Institution of Mechanical Engineers in 2006; Young Researcher Award 2007; ASME Best Paper Award in Structures 2008; three Best Paper Awards in IEEE conferences (2009, 2010, 2011); Best Student Paper/Contributions Awards in international conferences (2006, 2008, 2011); Postgraduate Research Output Award 2010; Research Excellence Award 2010-11; Professor Charlie K. Kao Student Creativity Awards, Champion, Postgraduate Individual Entries 2011; Youth Technology Innovation Award of China 2011; Best Poster Award, CU Energy Day 2012; Best Project Award, Undergraduate Research Summer Internship 2013.



Achievement of Faculty Members

1993

- Prof. **Wong King-Lap** was awarded the Fellow of American Physical Society (APS)
- Prof. **Yam Yeung** (with **E. Mettler**, **D. Bayard**, **F.Y. Hadaegh**, **M. Milman**, and **R. Scheid**) received the NASA Tech Brief - Certification of Recognition for the project of "Autonomous Frequency - Domain System - Identification Program"

1998

- Prof. **Liu Yun Hui** (with **K. Kitagaki**, **T. Ogasawara** and **T. Suehiro**) received the Best Journal Paper Award, Robotics Society of Japan
- Prof. **Mak Fuk Tat Arthur** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)

2000

- Prof. **Liao Wei Hsin** received the Faculty Exemplary Teaching Award 1999, Faculty of Engineering, CUHK
- Prof. **Liao Wei Hsin** and MPhil students **Lam Hiu Fung Alan** and **Lai Chun Yu** received the Gold Award in the Best Automobile Project of the Year 2000 Competition organised by the Institute of the Motor Industry Hong Kong for the project "Automobile Suspension Systems with MR Fluid Dampers"

2001

- Prof. **Kwong Chung Ping** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Liao Wei Hsin** received the Faculty Exemplary Teaching Award 2000, Faculty of Engineering, CUHK
- Prof. **Liu Yun Hui** was awarded the Chang Jiang (Cheung Kong) Scholar by the Ministry of Education (China) and Li Ka Shing Foundation (Hong Kong)
- Prof. **Wang Yu Michael** (with **D. Pelinescu**) received the Kayamori Best Award of 2001 IEEE International Conference on Robotics and Automation (ICRA 2001) for the paper "Optimal Fixture Layout Design in a Discrete Domain for 3D Workpieces"
- Prof. **Xu Yangsheng** was elected as the Academician of the International Eurasian Academy of Science
- Prof. **Xu Yangsheng** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)

2002

- Prof. **Huang Jie** was awarded the Chang Jiang (Cheung Kong) Scholar by the Ministry of Education (China) and Li Ka Shing Foundation (Hong Kong)
- Prof. **Li Wen Jung** was selected as the Distinguished Overseas Scholar by the Chinese Academy of Sciences
- Prof. **Li Wen Jung** received the Faculty Exemplary Teaching Award 2001, Faculty of Engineering, CUHK
- Prof. **Wang Yu Michael** received the "Overseas Young Investigator Collaboration Award" of the Natural Science Foundation of China (NSFC)

2003

- Prof. **Du Ruxu** and PhD student **He Kai** (together with **Jin Zhenlin**

and **Guo Wei Zhong**) received the Best Paper Award at the 17th Chinese National Conference on Mechanics and Design

- Prof. **Li Wen Jung** and PhD student **Chan Ho Yin** received the Best Conference Paper Award at the IEEE International Conference on Robotics and Automation (ICRA 2003) for the paper "A Thermally Actuated Polymer Micro Robotic Gripper for Manipulation of Biological Cells"

- Prof. **Liao Wei Hsin** received the Faculty Exemplary Teaching Award 2002, Faculty of Engineering, CUHK

- Prof. **Liu Yun Hui** (with **I. Elhajj**, **W. Fung** and **N. Xi**) received the Best Paper (1st place) Award at the 2003 IEEE Third Electro/Information Technology Conference

- Prof. **Xu Yangsheng** was elected as the Fellow of the Institute of Electrical and Electronics Engineers (IEEE)

- Prof. **Xu Yangsheng** and PhD student **Ou Yousheng** received the Best Paper Award at the 2003 IEEE Intelligent Automation Conference for the paper "Dependency Analysis of Input Selection for Learning Human Control Strategy"

2004

- Prof. **Du Ruxu** received the CLP (China Light and Power Holdings) Renewable Energy Award

- Prof. **Huang Jie** and PhD student **Chen Zhiyong** received the Best Paper Award at the Eighth International Conference on Control, Automation, Robotics, and Vision (ICARCV 2004) for the paper "A Variation of the Small Gain Theorem"

- Prof. **Li Wen Jung** and PhD student **Lai Wai Chiu King** received the Best Conference Paper Award at the 2004 International Conference on Intelligent Mechatronics and Automation for the paper "Automated Assembly of Surface MEMS Mirrors by Centrifugal Force"

- Prof. **Liao Wei Hsin** was awarded the Fellow of the Institute of Physics (IOP)

- Prof. **Wang Yu Michael** received the Science and Technology Development Award (Class II), The Ministry of Education, China

- Prof. **Wang Yu Michael** was awarded the Chang Jiang (Cheung Kong) Scholar by the Ministry of Education (China) and Li Ka Shing Foundation (Hong Kong)

- Prof. **Wong King-Lap** received the 2004 American Physical Society Award for Excellence in Plasma Physics Research (also known as The John Dawson Award)

2005

- Prof. **Huang Jie** was selected as the Distinguished Lecturer of IEEE Control Systems Society (2005-2008)

- Prof. **Huang Jie** was elected as the Fellow of the Institute of Electrical and Electronics Engineers (IEEE)

- Prof. **Liu Yun Hui** (with **Han Ding** and **X. Y. Zhou**) received the Natural and Technology Progress Award (2nd class), Ministry of Education, China

- Prof. **Wang Yu Michael** was elected as the Fellow of the American Society of Mechanical Engineers (ASME)

- Prof. **Yao Zhiyang** received the Faculty Exemplary Teaching Award 2004, Faculty of Engineering, CUHK

2006

- Prof. **Chung Chi Kit Ronald** received the Faculty Exemplary Teaching Award 2005, Faculty of Engineering, CUHK
- Prof. **Du Ruxu** and PhD student **Liang Jian** received the "Best of the Best Awards - Most innovative Project Award" for the project "A New Absorption Air-Conditioner powered by Low Quality Renewable Energy" supported by CLP Energy Innovation Fund, CLP Power HK Ltd.
- Prof. **Huang Jie** was awarded the Croucher Senior Research Fellowship Award (2006-2007)
- Prof. **Hui Kin Chuen** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Liao Wei Hsin** received the Faculty Exemplary Teaching Award 2005, Faculty of Engineering, CUHK
- Prof. **Liao Wei Hsin** and MPhil student **Lau Yiu Kee Chris** were awarded the T A Steward-Dyer/F H Trevithick Prize 2005 by the Railway Division of the Institution of Mechanical Engineers for the paper "Design and Analysis of Magnetorheological Dampers for Train Suspension"
- Prof. **Liao Wei Hsin** and PhD student **Dai Ruoli** received the Scholarship Award at the 17th International Conference on Adaptive Structures and Technologies (ICAST2006) for the paper "Experimental Studies on Carbon Nanotube Composites for Vibration Damping"
- Prof. **Wang Yu Michael** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Wang Yu Michael** was selected as the Distinguished Lecturer of the IEEE Robotics and Automation Society (2006-2007) (2008-2010)
- Prof. **Xu Yangsheng** received the Best Research Project Award in Chinese National Hi-Tech Exhibition

2007

- Prof. **Li Wen Jung** received the Faculty Exemplary Teaching Award 2006, Faculty of Engineering, CUHK
- Prof. **Li Wen Jung** received the Vice-Chancellor's Exemplary Teaching Award 2006, CUHK
- Prof. **Li Wen Jung** and MPhil student **Chung Chor Fung** received the Best Conference Paper Award at the 2007 IEEE/ASME International Conference on Advanced Intelligent Mechatronics
- Prof. **Wang Jun** was elected as the Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
- Prof. **Wang Yu Michael** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Wang Yu Michael** was awarded the Distinguished Alumnus, School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, China
- Prof. **Wang Yu Michael** (with **Liu Weijun** and **Wu Xiaojun**) received the Best Conference Paper Award for the paper "A CAD Modeling System for Heterogeneous Objects" at the 2007 International CAD Conference & Exhibition (CAD2007)
- Prof. **Wang Yu Michael** and PhD student **Chen Shikui** received the Compliant Mechanisms Theory Award of the ASME 31st

Mechanisms and Robotics Conference for the paper "Designing Distributed Compliant Mechanisms with Characteristic Stiffness"

- Prof. **Xu Dongyan** received the 2007 ASME IMECE Best Poster Award
- Prof. **Xu Yangsheng** was elected as the Academician of the Chinese Academy of Engineering
- Prof. **Xu Yangsheng** and PhD students **Chen Meng** and **Huang Bufu** received the Best Paper Award at the IEEE International Conference on Information Acquisition (ICIA 2007) for the paper "Human Abnormal Gait Modeling via Hidden Markov Model"

2008

- Prof. **Du Ruxu** and PhD student **Luo Yuanxin** received the Excellent Technology Transfer Award for "Dieless Sheet Metal Forming" at the 10th China Hi-Tech Fair
- Prof. **Hui Kin Chuen** received the Hong Kong ICT Awards 2008: The Best Digital Entertainment (Digital Entertainment Software) Certificate of Merit, for the project of "Sustainability Voyage"
- Prof. **Liao Wei Hsin** received the Young Researcher Award 2007, CUHK
- Prof. **Liao Wei Hsin** and PhD student **Guan Ming Jie** received the ASME Best Paper Award in Structures 2008 for a journal paper "On the Efficiencies of Piezoelectric Energy Harvesting Circuits Towards Storage Device Voltages" published in Smart Materials and Structures
- Prof. **Wang Changling Charlie** received the Faculty Exemplary Teaching Award 2007, Faculty of Engineering, CUHK
- Prof. **Wang Changling Charlie** (with **Chen Yong**) received the 2008 CIE Best Paper Award at the ASME 28th Computers and Information in Engineering Conference for the paper "Layer Depth-Normal Images for Complex Geometries - Part One: Accurate Modeling and Adaptive Sampling"
- Prof. **Wang Jun** was awarded the Chang Jiang (Cheung Kong) Scholar by the Ministry of Education (China) and Li Ka Shing Foundation (Hong Kong) (2008-2011)
- Prof. **Wang Jun** and PhD student **Liu Qingshan** received the IEEE Transactions on Neural Networks Outstanding Paper Award
- Prof. **Wang Yu Michael** was awarded the Distinguished Overseas Scholar of the Chinese Academy of Sciences, China
- Prof. **Wang Yu Michael** received the Research Excellence Award 2007-2008, CUHK
- Prof. **Xu Yangsheng** received the Robotic Drama, Robotic Waiter and Dancing Robot Awards at the 10th China Hi-Tech Fair
- Prof. **Xu Yangsheng** was elected as the Fellow of the Hong Kong Academy of Engineering Science
- Prof. **Yam Yeung**, Dr. **Tong Hang** and MPhil student **Tse Kim Fung** (together with **Cheng Haobo**, and **Wong Lung**) received the 2007 Hong Kong Award for Industries: Technological Achievement - Certificate of Merit for the project of "Technology Development and Application for Making Near Meter-range Telescope Mirrors"

2009

- Prof. **Du Ruxu** was elected as the Fellow of the American Society of Mechanical Engineers (ASME)

• Prof. **Du Ruxu** (with **He Kai** and **Jin Zhenlin**) received the 2008 Hong Kong Awards for Industries: Machinery and Machine Tool Design - Certificate of Merit for the project of "A Controllable Hybrid Controllable Mechanical Metal Forming Press"

• Prof. **Huang Jie** was elected as the Fellow of the International Federation of Automatic Control (IFAC)

• Prof. **Liao Wei Hsin** was elected as the Fellow of the American Society of Mechanical Engineers (ASME)

• Prof. **Liao Wei Hsin** and PhD student **Liang Junrui** received the Best Paper Award in Automation at the 2009 IEEE International Conference on Information and Automation for the paper "An Improved Self-Powered Switching Interface for Piezoelectric Energy Harvesting"

• Prof. **Liu Yun Hui** was elected as the Fellow of the Institute of Electrical and Electronic Engineers (IEEE)

• Prof. **Wang Changling Charlie** received the 2008 Best Lifestyle Bronze Award (Work Life and Professional Services) of Hong Kong ICT Awards for the project of "From Styling Design to Fabricated Wetsuit"

• Prof. **Wang Changling Charlie** received the Faculty Exemplary Teaching Award 2008, Faculty of Engineering, CUHK

• Prof. **Wang Changling Charlie** received the Vice-Chancellor's Exemplary Teaching Award 2008, CUHK

• Prof. **Wang Changling Charlie** received the Idea Award – 2nd Place for the research of "GPU Based Solid Modeler for Complex Objects" at the CAD'09

• Prof. **Wang Changling Charlie** received the 2009 ASME CIE (Computers and Information in Engineering) Young Engineer Award

• Prof. **Wang Changling Charlie** received the VX Corporation Idea Award (2nd Place) by the Research - "GPU Based Solid Modeler for Complex Objects" at the International CAD Conference and Exhibition

• Prof. **Wang Jun** received the Research Excellence Award 2008-2009, CUHK

• Prof. **Wang Jun** received the Natural Science Award (Class I), Shanghai Municipal Government, China

• Prof. **Wang Yu Michael** (with **Song Peng** and **Wu Xiaojun**) received the Best Paper Award in Information at the 2009 IEEE International Conference on Information and Automation for the paper "A Robust and Accurate Method for Visual Hull Computation"

2010

• Prof. **Chung Chi Kit Ronald** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)

• Prof. **Huang Jie** and PhD alumni **Chen Zhiyong** (together with **Ye Xudong** and **Zhang Ji-Feng**) received the China State Natural Science Prize, Class II for 2010 for the project "Nonlinear Output Regulation Problem and the Internal Model Principle"

• Prof. **Li Wen Jung** was elected as the Fellow of the Institute of Electrical and Electronics Engineers (IEEE)

• Dr. **Li Yiyang** received the Faculty Exemplary Teaching Award 2009, Faculty of Engineering, CUHK

• Prof. **Liao Wei Hsin** and PhD student **Liang Junrui** received the Best Information Paper Award at the 2010 IEEE International Conference on Information and Automation for the paper "Impedance Analysis for Piezoelectric Energy Harvesting Devices under Displacement and Force Excitations"

• Prof. **Liu Yun Hui** and PhD student **Wang Hesheng** received the SUPCON Best Paper Award of the 2010 World Congress on Intelligent Control and Automation (WCICA)

• Prof. **Wang Changling Charlie** received the Young Researcher Award 2009, CUHK

• Prof. **Wang Jun** was selected as the Distinguished Lecturer of the IEEE Computational Intelligence Society (2010-2012) (2014-2016)

• Prof. **Xu Yangsheng** and research staff **Ding Ning** received the Best Poster Paper Award for the paper "Energy-Based Surveillance Systems for ATM Machines" at the 8th World Congress on Intelligent Control and Automation

2011

• Prof. **Du Ruxu** and MPhil student **Lei Man Cheong** received the Certificate of Merit of the IAENG International Conference on Modeling Simulation and Control 2011 for the paper "Geometry Modeling and Simulation of the Wire-Driven Bending Section of a Flexible Ureteroscope"

• Prof. **Huang Jie** was elected as the Fellow of the Chinese Association of Automation (CAS)

• Prof. **Li Wen Jung** was elected as the Fellow of the American Society of Mechanical Engineers (ASME)

• Prof. **Liao Wei Hsin** received the Research Excellence Award 2010-2011, CUHK

• Prof. **Liao Wei Hsin** and PhD alumni **Chan Kwong Wah** (together with **Shen Chien Yu**) received the Best Conference Paper Award at the 2011 IEEE International Conference on Mechatronics and Automation for the paper "Active-Passive Hybrid Actuators for Tracking and Focusing Motions in Optical Pickup Devices"

• Prof. **Liu Yun Hui** and PhD student **Lau Tak Kit** won the 2nd Runner Up Award, Lenovo Innovative Design Competition, Hong Kong

• Prof. **Wang Changling Charlie** and MPhil student **Huang Pu** (together with **Chen Yong**) received the 2011 CAPPD Prakash Krishnaswami Best Paper Award at the ASME IDETC/CIE 2011 Conference - 31th Computers and Information in Engineering Conference for the paper "Self-intersection Free and Topologically Faithful Slicing of Implicit Solid"

• Prof. **Wang Jun** received the Outstanding Achievement Award from Asia Pacific Neural Network Assembly (APNNA), 2011

• Prof. **Wang Jun** (with **Hu X.L.** and **Liu Q.S.**) received the Natural Science Award (Class I), The Ministry of Education, China

• Prof. **Wang Jun** and PhD alumni **Liu Qingshan** received the IEEE Transactions on Neural Networks Outstanding Paper Award of the IEEE Computational Intelligence Society for the paper "A One-layer Recurrent Neural Network with a Discontinuous Hard-limiting Activation Function for Quadratic Programme"

• Prof. **Xu Yangsheng** and PhD students **Lam Tin Lun** and **Qian Huihuan** received the Best Paper Award of the IEEE/

ASME Transactions on Mechatronics for the paper entitled "Omnidirectional Steering Interface and Control for a Four Wheel Independent Steering Vehicle"

- Prof. **Xu Yangsheng** was elected as the Fellow of the International Academy of Astronautics (IAA)
- Prof. **Yam Yeung** received The Faculty Exemplary Teaching Award 2010, Faculty of Engineering, CUHK

2012

- Prof. **Du Ruxu** was elected as the Fellow of the Society of Manufacturing Engineers (SME)
- Prof. **Du Ruxu** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Huang Jie** and PhD alumni **Chen Zhiyong** received the SUPCON Best Paper Award for the paper "Parameter Convergence Analysis in Adaptive Disturbance Rejection Problem of Rigid Spacecraft" at the 9th World Congress on Intelligent Control and Automation
- Prof. **Liao Wei Hsin** received the Dean's Exemplary Teaching Award 2011, Faculty of Engineering, CUHK
- Prof. **Liao Wei Hsin** received the Vice-Chancellor's Exemplary Teaching Award 2011, CUHK
- Prof. **Liao Wei Hsin** received the Chapter of the Year Award (Chair: W. H. Liao), IEEE Robotics and Automation Society
- Prof. **Liao Wei Hsin** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Liu Yun Hui** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)
- Prof. **Wang Changling Charlie** (with **Yuen Ming-Fai**) received the Natural Science Award (2nd Class) of the Ministry of Education (MOE), P.R. China for the project of "Research of Semantic Feature Based 3D Garment Design"
- Prof. **Wang Jun** received the MoE Higher Education Outstanding Scientific Research Output Awards (Science and Technology) 2011 - 1st class Prize for the project of "Neurodynamic Optimization Models and Their Applications"
- Prof. **Wang Jun** was elected as the Fellow of the International Association for Pattern Recognition (IAPR)
- Prof. **Wang Yu Michael** (with **H. Ding, D. Pelinescu, Z. P. Ying, L.M. Zhu** and **X.Y. Zhu**) received the China State Natural Science Prize (Class II), The Ministry of Science and Technology, China
- Prof. **Xu Yangsheng** received the Outstanding Technology and Products Awards in the 14th China Hi-Tech Fair for the projects of "Lower-limb Exoskeleton Walk-Assistive Robot", "Community Surveillance Robot" and "Robot for Psychological Pressure Releasing"
- Prof. **Yam Yeung** was elected as the Fellow of the Hong Kong Institution of Engineers (HKIE)

- Prof. **Zhang Li** received the Best Student Paper Award at the 2012 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS2012) as a co-author of the student winner (**Kathrin Peyer**)

2013

- Prof. **Chen Shih Chi** received the Hong Kong Research Grants Council (RGC) Early Career Award (2013-14)

- Prof. **Chen Shih Chi** and PhD students **Cheng Jiyi** and **Zhang Dapeng** received the Best Paper Award in the 2013 International Symposium on Optomechatronic Technologies for the paper "Multi-depth RealTime Confocal Imaging"

- Prof. **Huang Jie** was awarded the 2nd Prize of 2013 Science and Technology Award (Liaoning Province), China

- Prof. **Huang Jie** received the Excellent Worker Recognition from the Chinese Association of Automation

- Dr. **Li Yiyang** received the Dean's Exemplary Teaching Award 2012, Faculty of Engineering, CUHK

- Prof. **Wang Changling Charlie** was elected as the Fellow of the American Society of Mechanical Engineers (ASME)

- Prof. **Wang Changling Charlie** (with **Chen Yong, Pan Yayua, Zhao Xuejun** and **Zhou Chi**) received the NAMRI/SME (North American Manufacturing Research Institution of the Society of Manufacturing Engineers) Outstanding Paper Award at the SME 41st North American Manufacturing Research Conference, 2013 for the paper "An Integrated CNC Accumulation System for Automatic Building-around-inserts"

- Prof. **Wang Yu Michael** received the 2013 ASME Design Automation Award of the American Society of Mechanical Engineers (ASME)

- Prof. **Yam Yeung** was selected as the Fellow of the Institution of Mechanical Engineers (IMechE)

- Prof. **Zhang Li** received the Hong Kong Research Grants Council (RGC) Early Career Award (2013-14)

- Prof. **Zhang Li** received the Living Machines Award for Best Paper as a co-author in the 2nd International Conference on Biomimetics and Biohybrid Systems (Living Machines 2013)

- Prof. **Zhang Li** received the JALA Ten Award 2013 - Journal of Laboratory Automation (JALA), recognizing top ten technological breakthroughs of 2012

2014

- Prof. **Huang Jie** was awarded Choh-Ming Li Professor of Mechanical and Automation Engineering, CUHK

- Prof. **Liao Wei Hsin** was awarded Outstanding Fellow of the Faculty of Engineering, CUHK

- Dr. **Li Yiyang** received the Dean's Exemplary Teaching Award 2013, Faculty of Engineering, CUHK

- Prof. **Lu Yi Chun** received the Hong Kong Research Grants Council (RGC) Early Career Award (2014-15)

- Prof. **Wang Jun** received the 2014 Neural Networks Pioneer Award of the IEEE Computational Intelligence Society

- Prof. **Xu Dongyan** and PhD student **Fu Qiang** won the 1st Prize of the Best Poster Award at the 2nd International Conference on Phononics and Thermal Energy Science (PTES 2014)

- Prof. **Xu Dongyan** and PhD student **Wang Xiaomeng** won the 3rd Prize of the Best Poster Award at the 2nd International Conference on Phononics and Thermal Energy Science (PTES 2014)

Awards of Students

1997

- **Au Kwok Wai Samuel** (UG student, supervisor Prof. **Yam Yeung**) won the 3rd Prize in the 5th Challenge Cup Science and Technology Competition, China for the project of "Fuzzy Controlled Robot"

2000

- **Fung Kar Man Carmen**, **Lai Wai Chiu King** (MPhil students) and Profs. **Li Wen Jung** (supervisor) and **Liu Yun Hui** together with **Imad Elhajji**, **Ning Xi** received the Best Student Paper Award at the 2000 International Conference on Information Society in the 21st Century: Emerging Technologies and New Challenges for the paper "Sensing and Action in a Micro Environmental via Internet"
- **Lam Hiu Fung Alan**, **Lai Chun Yu** (MPhil students) and Prof. **Liao Wei Hsin** (supervisor) won the Gold Award in the Best Automobile Project of the Year 2000 Competition organised by the Institute of the Motor Industry Hong Kong for the project of "Automobile Suspension Systems with MR Fluid Dampers"

2001

- **Lam Hiu Wai Raymond** (UG student) won the 3rd Prize of the IEEE Hong Kong Section 2001 Student Paper Contest
- **Wong Tak Sing Victor** (UG student) received the Lucent Global Science Scholars Award 2001

2002

- **Lam Hiu Fung Alan** (PhD student) and Prof. **Li Wen Jung** (supervisor) won the 1st Runner-Up of 2002 IEE Hong Kong Younger Members Section Paper Contest (2001-2002)
- **Lam Miu Ling** (MPhil student) received the Sir Edward Youde Memorial Fellowship for Postgraduate Research Students
- **Lau Yiu Kee Chris** (UG student, supervisor Prof. **Liao Wei Hsin**) won the Best Final Year Project 2001/02, awarded jointly by HKIE MMNC Division, ASME HK Section, and IMechE HK Branch
- **Ou Yousheng** (PhD student) and Prof. **Xu Yangsheng** (supervisor) received the "Student Author Scholarships" at the IEEE International Conference on Robotics and Automation (ICRA 2002)
- **Zhang Yu Nong** (PhD student) received the Lee Hysan Foundation Postgraduate Studentship for Mainland China Students 2001/2002

2003

- **Chan Ho Yin** (MPhil student, supervisor Prof. **Li Wen Jung**) received the Best MPhil Dissertation Award 2003, Faculty of Engineering, CUHK
- **Chan Ho Yin** (PhD student) and Prof. **Li Wen Jung** (supervisor) received the Best Conference Paper Award at the IEEE International Conference on Robotics and Automation (ICRA 2003) for the paper "A Thermally Actuated Polymer Micro Robotic Gripper for Manipulation of Biological Cells"
- **Chen Zhiyong** (PhD student) received the Lee Hysan Foundation Postgraduate Studentship for Mainland China Students 2002/03
- **Chow Man Kit Eric** (MPhil student) and Prof. **Liu Yun Hui** (supervisor) won the 5th Prize Award at the 2003 International Student Experimental Hands-on Project Competition via Internet on Intelligent Mechatronics and Automation

- **Fung Kar Man Carmen** (PhD student), **Wong Tak Sing Victor** (UG student) and Prof. **Li Wen Jung** (supervisor) won the Best Student Poster Award at the 3rd IEEE Conference on Nanotechnology (IEEE-NANO 2003) Student Competition for "Towards Batch Fabrication of Bundled Carbon Nanotube Thermal Sensors"

- **He Kai** (PhD student), Prof. **Du Ruxu** (supervisor) together with **Jin Zhenlin** and **Guo Wei Zhong** received the Best Paper Award at the 17th Chinese National Conference on Mechanics and Design

- **Kwong Ching Han Charlottee** (UG) won the Best Final Year Project Award 2003 for the paper "Nanometric Optical Fiber Probed Tip Fabrication by Micro-Meniscus Etching" organised by HKIE (MMNC Division), ASME HK Section, and IMechE (HK Branch)

- **Lam Hiu Fung Alan** (PhD student, supervisor Prof. **Li Wen Jung**) won the 1st Prize of the IEEE Hong Kong Section Postgraduate Student Paper Contest (2002-2003)

- **Lau Yiu Kee Chris** (MPhil student, supervisor Prof. **Liao Wei Hsin**) won the 3rd Prize in the Undergraduate Division of Hong Kong Section Student Paper Contest organised by the IEEE

- **Lee Ka Keung Caramon** (PhD student) received the Sir Edward Youde Memorial Fellowships for Postgraduate Research Students 2002/03

- **Ou Yousheng** (PhD student) and Prof. **Xu Yangsheng** (supervisor) received the Best Paper Award at the 2003 IEEE Intelligent Automation Conference for the paper "Dependency Analysis of Input Selection for Learning Human Control Strategy"

- **Wong Tak Sing Victor** (UG student) won the 1st Prize in the Best Paper on Materials Contest sponsored by HKIE's Material Division for his work on Carbon Nanotube Manipulation; won the 1st Prize in the Undergraduate Division of Hong Kong Section Student Paper Contest 2002 organised by the IEEE

2004

- **Chen Zhiyong** (PhD student) and Prof. **Huang Jie** (supervisor) received the Best Paper Award at the Eighth International Conference on Control, Automation, Robotics, and Vision (ICARCV 2004) for the paper "A Variation of the Small Gain Theorem"

- **Lai Wai Chiu King** (PhD student) and Prof. **Li Wen Jung** (supervisor) won the Best Conference Paper Award at the 2004 International Conference on Intelligent Mechatronics and Automation for the work on "Automated Assembly of Surface MEMS Mirrors by Centrifugal Force"

- **Lam Hiu Fung Alan** (PhD student) and Prof. **Li Wen Jung** (supervisor) won the YDC E-Challenge Business Plan Competition of the Young Entrepreneurs Development Council; won the 2nd Prize of the IEEE Hong Kong Section Undergraduate Student Paper Contest (By MIDS Team)

- **Lam Hiu Fung Alan** (PhD student, supervisor Prof. **Li Wen Jung**), **Yan Ping** (student - CSE Dept) and 2 BA students won the 1st Prize of CUHK 2004 New Venture Business Plan Competition; won the 1st Runner-up of Division V in Moot Corp Competition at University of Texas at Austin, Texas, USA

- **Lam Hiu Wai Raymond** (MPhil student), **Wong Chi Yin Joe**, **Fong Tik Wai Davey** (UG students) and Prof. **Li Wen Jung** (supervisor) won the 2nd Prize of the IEEE Hong Kong Section Student Paper Contest for the paper "A Low-Power Wireless Motion Sensing System for Sports Science Applications"; won the 3rd Prize of

the IEEE Region 10 (Asia-Pacific) Student Paper Contest 2004 (Undergraduate Section)

- **Wong Chi Yin Joe, Fong Tak Wai Davey** and **Yan Ruiguang** (UG students) won the 2nd Prize of the IEEE Best Final Year Project Competition (by MIDS Teams), 2004

- The team of MAE and CSE staff and students (**Leung Yun Yee, Yan Ruiguang, Chan Fung Lam, Liu Chung Yan, Chim Ho Ming, Yu Ka Fai, Chan Wai Kin, Ho Chun Keung, Tong Chin Fung, Lau Tak Kit, Lau Siu Chit, Tse Mun Sum** and **Wong Chung Yan**) won the Best Engineering Award in the Robocon 2004 Hong Kong Contest

- The team of MAE staff and students (**Kwok Ka Wai, Leung Ka Chun, Wong Cheuk Wun, Wong Shueng Man, Lui Ka Chi, Lai Man Kit** and **Tse Kit Ming**) won the 2nd Runner-up Award in the Robocon 2004 Hong Kong Contest

2005

- **Chan Kwong Wah** (PhD student, supervisor Prof. **Liao Wei Hsin**) won the Vice Chancellor's Cup for Student Innovation (VCCI) - Postgraduate Individual Projects, CUHK for the project of "Precision Positioning of Hard Disk Drives Using Piezoelectric Micro Actuators"

- **Chen Zhiyong** (PhD student, supervisor Prof. **Huang Jie**) received the Faculty Outstanding Thesis Award 2005, Faculty of Engineering, CUHK

- **Lam Hiu Man Josh** (UG student) and Prof. **Yam Yeung** (supervisor) won the 2nd Prize of 2005 Undergraduate Student Contest organised by the IEEE for the paper "A Robot Drawing Technique for Contoured Surface Using an Automated Sketching Platform"

- **Lam Tin Lun** (UG student, supervisor Prof. **Xu Yangsheng**) received the Scholarship Award 2005 of the Institute of Industrial Engineers (Hong Kong) in recognition of outstanding scholastic ability and potential to serve the industrial engineering profession

- **Liu Chung Yan Etta** (MPhil student, supervisor Prof. **Du Ruxu**) received the Scholarship Award 2005 of the Institute of Industrial Engineers (Hong Kong) in recognition of outstanding scholastic ability and potential to serve the industrial engineering profession

- **Shi Guangyi** (PhD student, supervisor Prof. **Li Wen Jung**) and a team of MBA students won the Vice Chancellor's Cup for Student Entrepreneurship Competition (VCCE), CUHK; won the YDC E-Challenge 2005 Business Plan Competition of the Young Entrepreneurs Development Council

2006

- **Dai Rouli** (PhD student) and Prof. **Liao Wei Hsin** (supervisor) received the Scholarship Award at the 17th International Conference on Adaptive Structures and Technologies (ICAST2006) for the paper "Experimental Studies on Carbon Nanotube Composites for Vibration Damping"

- **He Kai** (PhD student) received the Lee Hysan Foundation Postgraduate Studentship for Mainland China Students 2006-07

- **Lam Hiu Man Josh** (UG student) and Prof. **Yam Yeung** (supervisor) won the 3rd Place in the 2006 IEEE Region 10 Undergraduate Student Paper Competition for the paper "Robot Drawing Techniques for Contoured Surface Using an Automated Sketching Platform"

- **Lam Hiu Wai Raymond** (MPhil student) and Prof. **Li Wen Jung** (supervisor) won the 1st Prize in the IEEE Region 10 (Asia-Pacific) Student Paper Contest 2005 (Graduate Section) for the paper "Digitally Controllable Polymer-based Integrated Microfluidic Systems for Automating Bio-fluidic Mixing and Manipulation"

- **Lam Miu Ling** (PhD student) and Prof. **Liu Yun Hui** (supervisor) received the Best Student Paper Award at the 2006 IEEE International Conference on Robotics and Biomimetics (ROBIO 2006) for the paper "Active Sensor Networks Deployment and Coverage Enhancement Using Circle Packings"

- **Lau Yiu Kee Chris** (MPhil student) and Prof. **Liao Wei Hsin** (supervisor) were awarded the T A Steward-Dyer/F H Trevithick Prize 2005 by the Railway Division of the Institution of Mechanical Engineers for the paper "Design and Analysis of Magnetorheological Dampers for Train Suspension"

- **Liang Jian** (PhD student) and Prof. **Du Ruxu** (supervisor) received the "Best of the Best Awards - Most Innovative Project Award" for the project of "A New Absorption Air-Conditioner powered by Low Quality Renewable Energy" supported by CLP Energy Innovation Fund, CLP Power HK Ltd.

- **Liu Chung Yan Etta** (MPhil student) and Prof. **Du Ruxu** (supervisor) received the Best Student Paper Award for the paper "Frame-Based Expert System for Label Pattern Design" at the 10th WSEAS International Conference on Computers

2007

- **Chan Ngai Shing Sunny** (MPhil student, supervisor Prof. **Du Ruxu**) won the Vice-Chancellor's Cup of Student Innovation (VCCI) - Postgraduate Individual Entries, CUHK for the project of "Development of Millimeter Scale Turning Centre (MMT) with Gear Hobbing Capability"; received the Special Award for the project of "Millimetre-Scale Turning Centre" at the 10th Challenge Cup

- **Chen Meng, Huang Bufu** (PhD students) and Prof. **Xu Yangsheng** (supervisor), received the Best Paper Award at the IEEE International Conference on Information Acquisition (ICIA 2007) for the paper "Human Abnormal Gait Modeling via Hidden Markov Model"

- **Chen Shikui** (PhD student) and Prof. **Wang Yu Michael** (supervisor) received the Compliant Mechanisms Theory Award at the ASME 31st Mechanisms and Robotics Conference for the paper "Designing Distributed Compliant Mechanisms with Characteristic Stiffness"

- **Chung Chor Fung** (MPhil student) and Prof. **Li Wen Jung** (supervisor) received the Best Conference Paper Award at the 2007 IEEE/ASME International Conference on Advanced Intelligent Mechatronics

- **Hu Xiaolin** (PhD student, supervisor Prof. **Wang Jun**) received the Postgraduate Research Output Award 2006, CUHK

- **Lam Chi Kan, Poon Ho Shing, Wong Hang Fai** (UG students) and 2 students of City University of Hong Kong won the JEC Outstanding Engineering Project Award (OEPA) 2006-2007 offered by Jardine Engineering Corporation for a joint project "Energy Conserved Water Heating System"

- **Liang Jian** (PhD student, supervisor Prof. **Du Ruxu**) received the Faculty Outstanding Thesis Award 2006, Faculty of Engineering, CUHK

- **Shi Guangyi** (PhD student) and Prof. **Li Wen Jung** (supervisor) won the Best Student Paper Award at the 2007 IEEE International Conference on Robotics and Biomimetics
- **Su Shuang** (MPhil student) and Prof. **Du Ruxu** (supervisor) won the Student Paper Award at the 2007 International Conference of Signal and Image Engineering
- **Wang Hesheng** (PhD student) and Prof. **Liu Yun Hui** (supervisor) won the Best Student Award at the 2007 IEEE International Conference on Integration Technology for the paper "Dynamic Visual Tracking with Eye-in-hand Camera"

2008

- **Guan Ming Jie** (PhD student) and Prof. **Liao Wei Hsin** (supervisor) received the ASME Best Paper Award in Structures 2008 for a journal paper "On the Efficiencies of Piezoelectric Energy Harvesting Circuits Towards Storage Device Voltages" published in Smart Materials and Structures
- **Lam Hiu Man Josh** (MPhil student) and Prof. **Yam Yeung** (supervisor) won the Best Student Poster Award for the Student Posters Competition for Joint Faculty Research Day, CUHK
- **Lam Miu Ling** (PhD student) received the Croucher Foundation Fellowship 2007/08 offered by the Croucher Foundation
- **Liang Junrui** (PhD student) and Prof. **Liao Wei Hsin** (supervisor) won the Best Student Contributions Award at the 19th International Conference on Adaptive Structures and Technologies (ICAST 2008) for the paper "On the Energy Flow in Piezoelectric Energy Harvesting with SSHI Interface"
- **Liu Lu** (PhD student, supervisor Prof. **Huang Jie**) received the Guan Zhao-Zhj Award at the 27th Chinese Control Conference for the paper "Global Disturbance Rejection of Lower Triangular Systems with Unknown Exosystem"
- **Liu Qingshan** (PhD alumni) and Prof. **Wang Jun** (supervisor) received the IEEE Transactions on Neural Networks Outstanding Paper Award
- **Luo Yuanxin** (PhD student) and Prof. **Du Ruxu** (supervisor) received the Excellent Technology Transfer Award for "Dieless Sheet Metal Forming" at the 10th China Hi-Tech Fair
- **Tse Kim Fung** (MPhil student), Prof. **Yam Yeung** (supervisor), Dr. **Tong Hang** (technician) together with **Cheng Haobo** and **Wong Lung** received the 2007 Hong Kong Award for Industries: Technological Achievement - Certificate of Merit for the project of "Technology Development and Application for Making Near Meter-range Telescope Mirrors"
- **Zhang Peng** (PhD student) and Prof. **Du Ruxu** (supervisor) won the Best Student Posters Award for the Student Posters Competition for Joint Faculty Research Day, CUHK
- **Zhao Ming** (MPhil student) and Prof. **Chung Chi Kit Ronald** (supervisor) received the Piero Zampersoni Best Student Paper Award at the 19th International Conference on Pattern Recognition (ICPR'08) for the paper "Trifocal Tensor under Linear Line Structures and Its Use in Line Transfer"

2009

- **Guo Hongtao** (PhD student) won the 2nd Prize of Paper Presentation at the 228th Tsinghua Forum for Doctoral Candidates

- **Kwok Tsz Ho** (PhD student, supervisor Prof. **Wang Changling Charlie**) received the Merit Award of the 3rd Vice-Chancellor's Cup of Student Innovation (VCCI) - Undergraduate Individual Category, CUHK for the project of "Fast Exemplar-based Image Inpainting Using Discrete Cosine Transformation"

- **Kwok Tsz Ho** (PhD student, supervisor Prof. **Wang Changling Charlie**) received the Academic Creativity Award for the project of "Fast Exemplar-based Image Inpainting Using Discrete Cosine Transformation"

- **Kwok Tsz Ho** (PhD student) and **Chan Kwan Chung** (MPhil student) under supervision of Prof. **Wang Changling Charlie** won the 3rd Prize at the 11th National Challenge Cup for the project of "Fast Exemplar-based Image Inpainting Using Discrete Cosine Transformation"

- **Lam Hiu Man Josh** (PhD student) and Prof. **Yam Yeung** (supervisor) won the Best Paper Award for the paper "Realization of Robotic Chinese Calligraphy by an Intelligent Art Robot" and the Best Demonstration Award for the project of "Robotic Expression of Acquired Penmanship (REAP)" at the 4th Beijing-Hong Kong International Doctoral Forum 2009

- **Liang Junrui** (PhD student) and Prof. **Liao Wei Hsin** (supervisor) won the Best Paper Award in Automation at the 2009 IEEE International Conference on Information and Automation for the paper "An Improved Self-Powered Switching Interface for Piezoelectric Energy Harvesting"

- **Luo Yuanxin** (PhD student, supervisor Prof. **Du Ruxu**) won the 1st Runner-up at the 3rd Vice-Chancellor's Cup of Student Innovation - Postgraduate individual Projects, CUHK for the project of "Design and Build and Incremental Sheet Metal Forming Machine"

- **Zhang Yunbo** (PhD student, supervisor Prof. **Wang Changling Charlie**) won the 3rd Vice-Chancellor's Cup of Student Innovation - Postgraduate Group Category, CUHK for the project of "From Styling Design to Fabricated Wetsuit"

2010

- **Lam Shing Yan** (UG student, supervisor Prof. **Chung Chi Kit Ronald**) won the 2nd Runner Up Award for the project of "Panoramic Viewing by Mirror Reflection" at the 7th Final Year Project Competition organized by IEEE (Hong Kong) Computational Intelligence Chapter

- **Liang Junrui** (PhD student) and Prof. **Liao Wei Hsin** (supervisor) received the Best Information Paper Award at the 2010 IEEE International Conference on Information and Automation for the paper "Impedance Analysis for Piezoelectric Energy Harvesting Devices under Displacement and Force Excitations"

- **Wang Hesheng** (PhD student) and Prof. **Liu Yun Hui** (supervisor) received the SUPCON Best Paper Award at the 2010 World Congress on Intelligent Control and Automation (WCICA)

- **Wang Zibin** (PhD student) received the Outstanding Tutors Awards 2010, Faculty of Engineering, CUHK

- **Yu Cheuk Him** (MPhil student, supervisor Prof. **Yam Yeung**) and **Cheung Ying-Kai** (BA student) won the Gold Award for the plan of "CNT Food Wastes Recycling Technology" at the bi-annual 7th e-Challenge Cup, Jilin University, Changchun, China

- **Yu Cheuk Him** (UG graduate, supervisor Prof. **Kwong Chung Ping**) won the Champion of the Best Final Year Energy Project in

Energy Institute 2009-2010 for the project of "Solar Tracking System Using Circular Fisheye Imaging"

- **Zhang Peng** (PhD student, supervisor Prof. **Du Ruxu**) won the Champion at the Sustainable Engineering Challenge for the proposal of "New Energy Harvest Device Based on Knudsen Compressor"

- **Zhao Ming** (MPhil student, supervisor Prof. **Chung Chi Kit Ronald**) received the Postgraduate Research Output Award 2009, CUHK

2011

- **Chen Chao** (PhD student, supervisor Prof. **Liao Wei Hsin**) won the Champion at the Professor Charles K. Kao Student Creativity Awards 2011 - Postgraduate Individual Entries, CUHK for the project of "Self-Powered, Self-Sensing Magnetorheological Dampers"; received the 7th Chinese Youth Science and Technology Innovation Prize, China; won the 2nd Prize at the 12th National Challenge Cup

- **Ho Pui Lam** (MPhil student) won the 2nd Runner Up of the Faculty 20th Anniversary Logo Design Competition, CUHK

- **Huang Pu** (MPhil student), Prof. **Wang Changling Charlie** (supervisor) together with **Chen Yong** received the 2011 CAPPD Prakash Krishnaswami Best Paper Award at the ASME IDETC/CIE 2011 Conference - 31th Computers and Information in Engineering Conference for the paper "Self-intersection Free and Topologically Faithful Slicing of Implicit Solid"

- **Hung See Long** (MSc student in BME), **Guo Hongtao** (PhD student), Prof. **Liao Wei Hsin** (supervisor) together with Profs. **Fong Tik Puk** and **Chan Kai Min** won the Best Student Paper at the IEEE ICIA 2011 for the paper "Experimental Studies on Kinematics and Kinetics of Walking with an Assistive Knee Brace"

- **Kwok Tsz Ho** (PhD student) and **Chan Ka Chun** (UG student) under supervision of Prof. **Wang Changling Charlie** received the Merit Award at the Professor Charles K. Kao Student Creativity Awards 2011 - Postgraduate Individual Entries, CUHK for the project of "Image-based 3D Human Body Scanner"

- **Lai Hok Sum** (UG graduate, supervisor Prof. **Li Wen Jung**) won the 2010-2011 Best Final Year Energy Project Competition at the Energy Institute for the project of "Ball-Like Energy Harvester Sphenergy"

- **Lai Wai Yin, Chan Chi Chong** and **Yu Cheuk Him** (MPhil students) won the Champion of the Recycling Energy Product Design Competition organized by the Sony Computer Entertainment HK Ltd.

- **Lam Tin Lun, Qian Huihuan** (PhD students) and Prof. **Xu Yangsheng** (supervisor) won the Best Paper Award of the IEEE/ASME Transactions on Mechatronics for the paper "Omnidirectional Steering Interface and Control for a Four Wheel Independent Steering Vehicle"

- **Lau Tak Kit** (PhD student, supervisor Prof. **Liu Yun Hui**) won the Champion in Postgraduate Student Research Paper Competition of the IEEE Hong Kong Computation Intelligence Chapter (2010-11); won the 2nd Runner Up Award, Lenovo Innovative Design Competition, Hong Kong; won the Best Student Paper Award for the paper "Learning Autonomous Drift Parking from One Demonstration" at the 2011 IEEE International Conference on Robotics and Biomimetics

- **Lei Man Cheong** (MPhil student) and Prof. **Du Ruxu** (supervisor) received the Certificate of Merit of the IAENG International Conference on Modeling Simulation and Control 2011 for the paper "Geometry Modeling and Simulation of the Wire-Driven Bending Section of a Flexible Ureteroscope"

- **Liang Junrui** (PhD student, supervisor Prof. **Liao Wei Hsin**) received the Postgraduate Research Output Award 2010, CUHK

- **Liu Qingshan** (PhD alumni) and Prof. **Wang Jun** (supervisor) received the IEEE Transactions on Neural Networks Outstanding Paper Award of the IEEE Computational Intelligence Society for the paper "A One-layer Recurrent Neural Network with a Discontinuous Hard-limiting Activation Function for Quadratic Programme"

- **Wang Zibin** (PhD student) and Prof. **Chung Chi Kit Ronald** (supervisor) won the Student Design Competition of the 2011 International Symposium on Optomechanronics Technologies (ISOT 2011)

- **Xing Lianping** (MPhil student) and Prof. **Hui Kin Chuen** (supervisor) received the Best Student Paper Award at the International CAD Conference and Exhibition (CAD'11) for the paper "A Visual and Geometry Based hybrid Approach for Surface Simplification"

- The Robocon Team and **Chen Shih Chi** (supervisor) won the Cyberport Best Team Spirit Award, Robocon 2011 Hong Kong Contest

2012

- **Kwok Tsz Ho** (PhD student, supervisor Prof. **Wang Changling Charlie**) received the Postgraduate Research Output Award 2011, CUHK

- **Lau Tak Kit** (PhD student) received the Outstanding Tutors Awards 2011, Faculty of Engineering, CUHK

- **Lee Man Kit** (UG student) received the Best Mechanical Engineering Student Award (CUHK) of the Institution of Mechanical Engineers Hong Kong Branch, 2012

- **Leung Yun Yee** (UG student) won the 1st Runner-up at the Apps in the City-Public Sector Information Application Competition (Student Stream - concept development category) organized by the Internet Professional Association; won the 1st Runner-up (Undergraduate Section) at the "Present Around the World Hong Kong (PATW HK) 2012" organized by the Institution of Engineering and Technology of Hong Kong for the project of "i-Device"

- **Lo Kwai Leung** (UG student, supervisor Prof. **Yam Yeung**) received the Honorable Mention of the Undergraduate Summer Research Internship 2012, Faculty of Engineering, CUHK for the project of "Building a Balancing Scooter"

- **Wang Zengyue** (UG student) received the University General Education Foundation Programme, CUHK - Outstanding Essay Award: in Dialogue with Humanity

- **Yip Chun Wa** (UG student, supervisor Prof. **Liu Yun Hui**) won the Best Project Award of the Undergraduate Summer Research Internship 2012, Faculty of Engineering, CUHK for the project of "Design and Development of an Unmanned Aircraft"

- **Yip Chun Wa, Lam Ho Yi, Mok Tsz Tung, Sa Yat Sing** (UG students), Dr. **Li Yiyang** (supervisor) and **Leung Yun Yee** (senior technician) won the Champion of the IMechE Greater China Region Design Competition 2012 (Theme: Automatic Material Sorter)

- **Yu Cheuk Him, Lai Wai Yin, Chan Chi Chong** (MPhil students) and Prof. **Yam Yeung** (project supervisor) won the Champion of the Jardine Engineering Corporation Outstanding Engineering Project Award 2012 for the project of "FLOAT - An Interactive 3D Paradox"
- **Yung Hin Yeung** (UG student) and Prof. **Liu Yun Hui** (supervisor) won the Best Project Award of the Undergraduate Summer Research Internship 2012, Faculty of Engineering, CUHK for the project of "Development of an Unnamed Aerial Vehicle"

2013

- **Cheng Jiyi, Zhang Dapeng** (PhD students) and Prof. **Chen Shih Chi** (supervisor) received the Best Paper Award in the 2013 International Symposium on Optomechatronic Technologies for the paper "Multi-depth real-time confocal imaging"
- **Kwok Tsz Ho** (PhD student, supervisor Prof. **Wang Changling Charlie**) received the 8th Chinese Youth Science and Technology Innovation Prize, China
- **Kwok Tsz Ho** (PhD student) and **Chan Ka Chun** (MPhil student) under supervision of Prof. **Wang Changling Charlie** received the Merit of the Professor Charles K. Kao Student Creativity Awards 2013 - Postgraduate Individual Entries, CUHK for the project of "Fast 3D Printer by Mask-Projection Based SLA"
- **Lau Tak Kit** (PhD student) received the Outstanding Tutors Awards 2012, Faculty of Engineering, CUHK
- **Leong Hou Wang** (UG student) and **Chao Tak Lon Alan** (UG student - EE Dept) under supervision of Prof. **Chen Shih Chi** won the Champion of the Professor Charles K. Kao Student Creativity Awards 2013 - Undergraduate Individual Entries, CUHK and the 3rd Prize (Undergraduate Teams) at the 13th National Challenge Cup for the project of "Virtual Reality Gloves"
- **Leung Yun Yee** (UG student) won the Bronze Award of Hong Kong ICT Awards 2013 - Best Innovation and Research (College and Undergraduates) for the project of "i-Device"
- **Li Chi Chung** (UG student, supervisor Prof. **Liao Wei Hsin**) won the Best Project Award of the Undergraduate Research Summer Internship 2013, Faculty of Engineering, CUHK for the project of "Energy-Converting Bike (ECo-Bike)"
- **Li Zheng** (PhD student) and **Lau Wai Pik** (MPhil student) under supervision of Prof. **Du Ruxu** won the 1st Prize (Postgraduate Teams) at the 13th National Challenge Cup for the project of "Underactuated Wire-Driven Mechanism and Highly Efficient Robot Fish"
- **Li Zheng** (PhD student) and **Lau Wai Pik** (UG student) under supervision of Prof. **Du Ruxu** won the Champion of the Professor Charles K. Kao Student Creativity Awards 2013 - Postgraduate Individual Entries, CUHK for the project of "Underactuated Wire-Driven Mechanism and Highly Efficient Robot Fish"
- **Su Youfeng** (PhD student, supervisor Prof. **Huang Jie**) won the 2012 CUHK Young Scholars Thesis Award
- **Wang Zeng Yue** (UG student) and **Li Linkai** (UG student - EE Dept) under supervision of Prof. **Liao Wei Hsin** won the 2nd Prize (Undergraduate Teams) at the 13th National Challenge Cup for the project of "Battery-less Wireless Keyboard"
- **Wang Zeng Yue, Chu Ki Sum** and **Huang Jian** (UG students) under supervision of Prof. **Liao Wei Hsin** received the Merit of

the Professor Charles K. Kao Student Creativity Awards 2013 - Undergraduate Individual Entries, CUHK for the project of "Battery-less Wireless Keyboard"

- **Yip Chun Wa** (UG student) and a team of students of Beihang University and University of Toronto won the 3rd Prize of Energy Conservation and Emission Reduction Group, the International Collegiate Design and Innovation Competition (Beijing 2013) for the project of "A Comprehensive Look at Emission Reduction Technologies in the Transportation Sector for Beijing, China Based on Comparative Fuel Analysis"

- **Yip Chun Wa, Lau Ka Chun, Lam Ho Yi** (UG students), Dr. **Li Yiyang** (supervisor) and **Leung Yun Yee** (technical staff) won the 1st Runner-up and the Most Innovative Design Award at the IMechE Greater China Region Design Competition 2013 (Theme: Potential Energy Car)

2014

- **Cai Jiandong** (PhD student) received the Outstanding Tutors Awards 2013, Faculty of Engineering, CUHK
- **Chan Chuen Wai, Keung Nga Fong** (UG students), **Yung Man Lee** and **Chan Chun Kit** (UG students - CSE Dept) won the Gold Award and "My Favorite Project" Award for the project of "Visually-impaired Positioning System", the Joint Institutes Competition at The HKIE Hi Tech Fiesta
- **Fu Qiang** (PhD student) and Prof. **Xu Dongyan** (supervisor) won the 1st Prize of the Best Poster Award at the 2nd International Conference on Phononics and Thermal Energy Science (PTES 2014)
- **Lee Tsun Ho** and **Lu Yuk Ying** (UG students) received the Best Student Award (CUHK) of the Institution of Mechanical Engineers Hong Kong Branch, 2014
- **Ting Sin Hang, Yeung Chi Ling, Eveyln Julipalas, Chan Chung Ho, Cheung Kai Hung, Yip Chun Wa** (UG students), **Lau Ka Chun** (MPhil student), Dr. **Li Yiyang** (supervisor) and **Leung Yun Yee** (technical staff) won the Champion of the IMechE Greater China Region Design Competition 2014 (Theme: Material Transporter)
- **Wang Xiaomeng** (PhD student) and Prof. **Xu Dongyan** (supervisor) won the 3rd Prize of the Best Poster Award at the 2nd International Conference on Phononics and Thermal Energy Science (PTES 2014)
- **Zhang Dapeng** and **Cheng Jiyi** (PhD students) under co-supervision of Profs. **Chen Shih Chi** and **Yam Yeung** won the CUHK Pre-Incubation Centre (Pi Centre) Competition for the project of "iScope"



Distinguished Lectures Series

20th Anniversary Distinguished Lectures Series (up to July 17, 2014)



Title Potential and Optimal Control of Human Head Movement
Speaker Prof. Bijoy K. Ghosh
 Texas Tech University, Lubbock TX, USA
Date October 8, 2013



Title Model Predictive Regulation
Speaker Prof. Arthur J. Krener
 University of California, Davis, USA
Date October 8, 2013



Title Industrial Robotics and Automation for Application at Nanoscale
Speaker Prof. Sergej Fatikow
 Research Institute for Information Technology (OFFIS), Germany
Date October 11, 2013



Title The University of Hawaii Smart Sustainable Microgrid Project
Speaker Prof. Anthony Kuh
 The University of Hawaii, Manoa, USA
Date October 29, 2013



Title Cooperative Control: Stability, Optimality, Learning and Games on Graphs: Applications to Microgrid
Speaker Prof. F.L. Lewis
 The University of Texas at Arlington, USA
Date November 15, 2013



Title Control and Management of Complex Systems: From Intelligent Control to Parallel Control
Speaker Prof. Derong Liu
 Chinese Academy of Sciences, China
Date November 19, 2013



Title The Third Law of Thermodynamics
Speaker Prof. Leon Chua
 Technische Universität München, Germany
Date November 28, 2013



Title On the Tailoring of Adaptive Structures for Structural Dynamics Enhancement
Speaker Prof. Kon-Well Wang
 University of Michigan, USA
Date January 9, 2014



Title Wearable Mechatronics for Human-X Interaction
Speaker Prof. I-Ming Chen
 Nanyang Technological University, Singapore
Date February 21, 2014



Title UNA Research at NUS
Speaker Prof. Ben M. Chen
 National University of Singapore, Singapore
Date February 24, 2014



Title Distributed Flocking Control of Multiple Mobile Robots with Connectivity Maintenance
Speaker Prof. Jie Chen
 Beijing Institute of Technology, China
Date February 24, 2014



Title Network Topology and Communication Data Rate for Multi-agent Consensus
Speaker Prof. Lihua Xie
 Nanyang Technological University, Singapore
Date February 24, 2014



Title Next Big Things in Robotics and Automation
Speaker Prof. T.J. Tarn
 Washington University, St. Louis, USA
Date April 2, 2014



Title Distributed Intelligent Systems: A Paradigm Shift
Speaker Prof. William A. Gruver
 Simon Fraser University, Canada
Date May 16, 2014



Title Precision Mapping and Vehicle State Estimation for Autonomous Highway Vehicles
Speaker Prof. Jay A. Farrell
 University of California, Riverside, USA
Date May 19, 2014



Title Putting the Turing into Manufacturing: Recent Developments in Algorithmic Automation
Speaker Prof. Ken Goldenberg
 University of California, Berkeley, USA
Date May 30, 2014



Title Towards Peer-to-Peer Human-Robot Teaming
Speaker Prof. Lynne Parker
 University of Tennessee, Knoxville, USA
Date May 30, 2014



Title Modeling and Control Challenges in Medical Nanorobotics
Speaker Prof. Antoine Ferreira
 University of Orléans, France
Date June 6, 2014



Title Precise Continuous Contact Motion Analysis for Freeform Geometry

Speaker Prof. Gershon Elber
Technion - Israel Institute of Technology, Israel

Date July 3, 2014



Title Potential Networked Evolutionary Game and Its Applications to Multi-agent Systems

Speaker Prof. Daizhan Cheng
Chinese Academy of Sciences, China

Date July 17, 2014

Other Distinguished Lectures Organised/Co-organised by MAE Department

Title Adaptive Structural System Synthesis with Multi-field Coupling (*Public Lecture by Wei Lun Visiting Professor*)

Speaker Prof. Kon-Well Wang
University of Michigan, USA

Date December 12, 2008

Title Optimal Control of Markov Decision Processes

Speaker Prof. Roger Brockett
Harvard University, USA

Date December 14, 2009

Title Automated Robot-based Nanohandling

Speaker Prof. Sergej Fatikow
University of Oldenburg, Germany

Date February 1, 2010

Title Model-based and Intermittent Feedback Control over Networks

Speaker Prof. Panos J. Antsaklis
University of Notre Dame, Indiana, USA

Date June 7, 2010

Title Cultural-based Particle Swarm Optimization for Multiobjective Optimization and Performance Metrics Ensemble

Speaker Prof. Gary G. Yen
Oklahoma State University, USA

Date July 6, 2011

Title Optimal Design for Cooperative Control Synchronization and Games on Communication Graphs

Speaker Prof. F.L. Lewis
The University of Texas at Arlington, USA

Date November 10, 2011



Title High-speed Atomic Force Microscopy: Scanner Design and Control Issues

Speaker Prof. Reza Moheimani
The University of Newcastle, Australia

Date December 14, 2011

Title Synchronization and Intervention in Flocks with Large Population

Speaker Prof. Lei Guo
Chinese Academy of Sciences, China

Date November 29, 2012

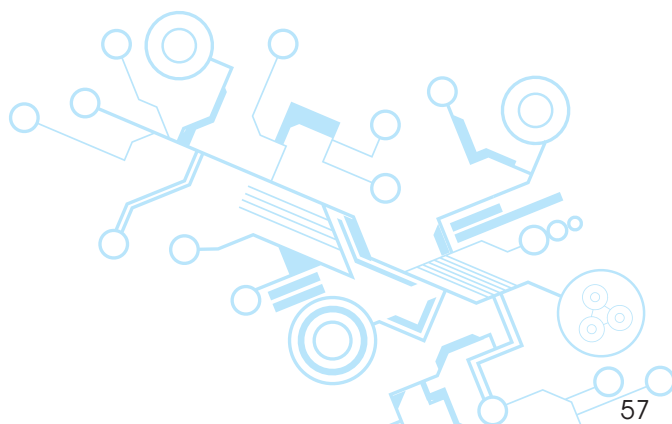


Photo Gallery

2004



• Chinese Astronaut Yang Liwei Visiting MAE Laboratory

2006



• Foundation Ceremony of Department Alumni Association

2006



• Visit to the Centre for Hybrid Intelligent Vehicle

2009



• Plaque-unveiling Ceremony of CUHK - SCUT Joint Research Centre for Automation Science and Engineering (JRCASE)

2010



• Establishment of CUHK - BIT Joint Research Center for Optomechanics Design and Engineering (JRCODE)

2010



• Banquet of ICMA2010 - Sustainable Design and Manufacturing

2011



• ISOT2011 International Symposium on Optomechanics Technologies

2011



• Faculty 20th Anniversary - Alumni Union Gathering



2012

• Champion of the IMechE Greater China Region Design Competition



2012

• Prof. Jie Huang received the State Natural Science Award (2nd Prize)



2012

• Champion of JEC Outstanding Engineering Project Award



2013

• MAE Department Advisory Committee Meeting



2013

• InnoAsia 2013: Special Tech Forum on Innovative Energy Technologies



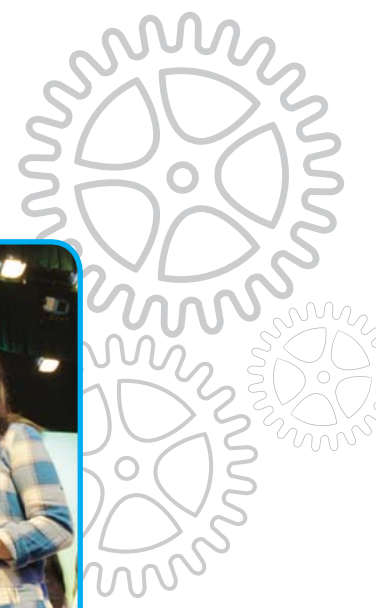
2013

• Alumni Homecoming Day in Faculty of Engineering



2013

• 1st Prize (Postgraduate Teams) at the 13th National Challenge Cup



2014



• MSc - BME Programme Annual Banquet

2014



• MSc - MAE Programme Annual Banquet

2014



• Photo-taking Day of UG - MAE Graduating Students

2014



• Annual Departmental Scholarship Presentation Ceremony

2014



• Champion of the IMechE Greater China Region Design Competition

2014



• Prof. Jun Wang received the 2014 Neural Networks Pioneer Award of the IEEE Computational Intelligence Society, 2014



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