

DEPARTMENT OF

Civil Engineering

土木工程系 Newsletter

SEPTEMBER 2018 - FEBRUARY 2019



THE UNIVERSITY OF HONG KONG

The 2018 Architecture Master Prize

Project Mingde:

Past and Future Prospects

HKU Faculty of Engineering established Project Mingde in 2004. This project arranges for teachers and students to work as volunteers to build schools, dormitories, toilets, and bridges in impoverished villages. These projects aim to enhance the living standards of local villagers and provide education opportunities to schoolchildren. They also provide a platform for university students to contribute their skills and knowledge to society, and gain valuable learning experience.

Project Mingde was initiated by Professor Nicolas Yeung, a graduate of the Department of Civil Engineering. He decided to donate his time and money to build a new primary school building in Xiali Village, Rongshui County, Guangxi, and he invited HKU Engineering students to participate in this project. The project was a success, and the school was named "Mingde Building" after the first two Chinese characters of the HKU motto, "virtue and wisdom." This experiential learning program was accordingly named "Project Mingde."

In the 15 years since its establishment, teachers, students, and alumni engineers have completed ten real-world construction projects as part of Project Mingde. These include Mingde Building; Gewu Building, a student dormitory at a minority vocational school; Zhengdong Jie Kindergarten, rebuilt after the original building's destruction in the 2008 Sichuan Earthquake; Chaoyang Bridge, a footbridge in Yingdong Village; Dabao Mingde Pan Community and Cultural Centre, a complex building with classrooms for primary education and other community facilities; Jundi Building, a teachers' residence of Daping Village Primary School. In addition, Project Mingde has ventured into Vietnam and cooperated with World Vision to build two toilets with sanitation facilities and two libraries at

four local primary and secondary schools in Hanoi. More than 400 teachers and students have actively participated in these projects. Project Mingde requires students to participate in all stages of construction, from land surveying and structural design to site supervision and inspection, and to work with local contractors under the guidance of teachers and alumni engineers.

Fifteen Years of Achievements

The Dabao Mingde Pan Community and Cultural Centre, one of the completed projects, recently won two international awards. After being awarded the 2018 Architizer A+ Popular Choice Award (Architecture + Humanitarianism Category), the Dabao project recently also won the prestigious 2018 Architecture MasterPrize for Architectural Design / Educational Buildings. This project was jointly designed and built by project architect Ms. Elisabeth Lee and the Project Mingde Engineering Team.

Dabao Village is situated in a mountainous area and constantly covered by fog. Mr. Kwong Long Chi, one of the student participants in this project, shared his experience. "During a heavy rain, the volunteers' car broke down and became trapped in mud. They had to get out of the car and push it to the village. Due to the unpredictable weather and treacherous uphill road, it was difficult to transport construction materials to the site."

Project Mingde Engineering Team decided to use local natural resources (bamboo tubes) to build the façade wall. This solution reduced the need for construction material transportation, and the bamboo wall design could regulate noise and light while ensuring a quiet environment for classrooms. Because bamboo tubes are not commonly used for construction, their load-bearing capacity and durability posed a major challenge. Therefore, students created a model in the laboratory using the bamboo tubes, and conducted assessments to determine the appropriate tube sizes and construction method.

Ms. Elisabeth Lee notes that "it is not a brilliant idea that makes a building a piece of great architecture, but rather creating a design that responds to and shows a deep understanding of the people and place for which it was designed. The outcome of the project was the realization of an ingenious vision into a piece of architecture attuned to its environment and transformed by obstacles that arose during this process."

The HKU Motto of "Virtue and Wisdom" Lives On

This project fully demonstrates the spirit of Project Mingde: "we build as we grow." By participating in real-world construction projects, students gained hands-on knowledge of design and construction, and solved a range of engineering problems. The two international awards are an affirmation of the contributions of the teachers, students, alumni, and stakeholders involved in Project Mingde.

Professor Nicolas Yeung states that Project Mingde has moved with the times, evolving gradually from a personal project into an organized, sustainable curriculum item. It started as a building project intended to improve education in a mountainous area and to provide mentorship to university

students. Now it has been reborn as an experiential learning curriculum that combines knowledge with hands-on practice. Project Mingde will continue to give students from other faculties the chance to participate in this experiential learning program. The eternal flame of civilization will be passed on from generation to generation, and the HKU motto of "virtue and wisdom" will live on.

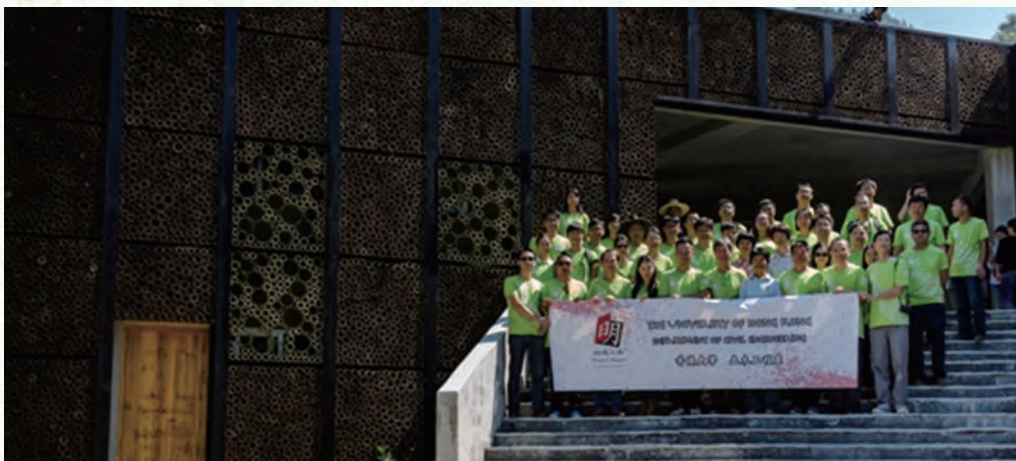
The Dean of HKU Engineering, Professor Christopher Chao, has firmly supported Project Mingde. He said, "As an alumnus of HKU, I am proud that our teachers and alumni volunteered to organize Project Mingde, which not only enriches students' experiential learning, but also enhances their all-round competencies. We hope to sustain and further promote the spirit of Project Mingde."



10th anniversary celebration for Project Mingde, held at Mingde Building.



The 2018 Architecture MasterPrize, awarded to Dabao Mingde Pan Community and Cultural Centre.

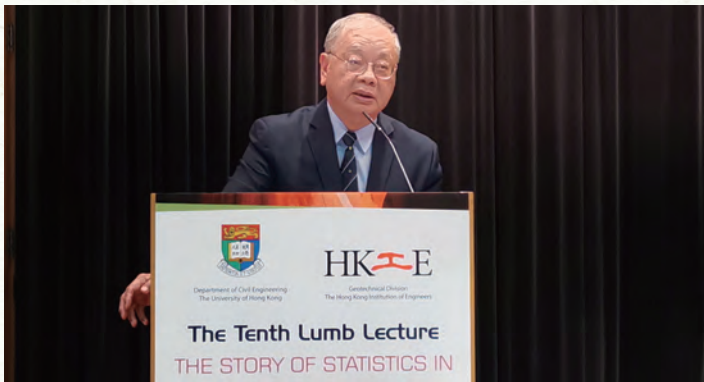


The teachers, students, and alumni engineers who participated in the design and construction of Dabao Mingde Pan Community and Cultural Centre.

Departmental Events

Tenth Lumb Lecture

Professor Kok-Kwang Phoon, Distinguished Professor and Vice Provost (Academic Personnel) of National University of Singapore and a Ph.D. graduate from Cornell University, delivered the Tenth Lumb Lecture on December 6, 2018 at Rayson Huang Theatre, HKU. The title of the Lecture was "The Story of Statistics in Geotechnical Engineering". The event was well attended by about 200 engineers, academics and students. Dr. Steve J. Cannon, Executive Vice-President (Administration and Finance), chaired the Lecture, representing the President. Ir Professor C.F. Lee introduced Professor Phoon Kok Kwang and Ir Dr. Victor Li delivered the vote of thanks. The Lumb Lecture was established in 1999 to mark Professor Peter Lumb's contributions to the engineering profession and education. The Lecture was organized by the Department of Civil Engineering, The University of Hong Kong and the Geotechnical Division of The Hong Kong Institution of Engineers biennially. Financial sponsorship from HKIE Geotechnical Division for this Tenth Lumb Lecture is gratefully acknowledged.



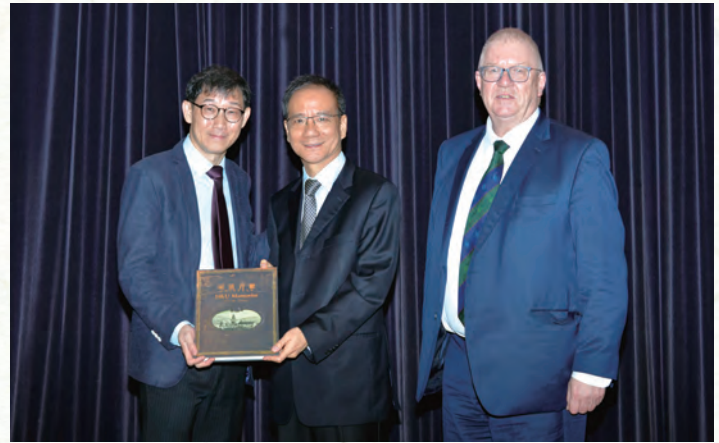
Ir Professor C.F. Lee introducing Professor Phoon.



Professor Phoon delivering the lecture.



Professor Steve Cannon presenting the plaque to Professor Phoon.



From Left: Professor K.K. Phoon, Ir Dr. Victor Li and Dr. Steve J. Cannon.



Group photo of Organising Committee members and distinguished guests at the Lecture.

Fifth Y.K. Cheung Lecture

Professor Nick Buenfeld, Head of Department of Civil & Environmental Engineering and Professor of Concrete Structures, Imperial College London, delivered the Fifth Y.K. Cheung Lecture on February 28, 2019 at Rayson Huang Theatre, HKU. The title of the Lecture was "Predicting the Durability of Concrete Structures". The event was well attended by about 150 engineers, academics and students. Ir Professor Chan Siu-lai chaired the Lecture, representing The Hong Kong Institution of Engineers. Ir Professor Christopher Chao, Dean of Engineering of The University of Hong Kong, introduced Professor Nick Buenfeld and Ir Ringo Yu, President of The Hong Kong Institution of Engineers, delivered the vote of thanks. Financial sponsorship from HKIE Structural Division for this Fifth Y.K. Cheung Lecture is gratefully acknowledged.



Professor Buenfeld delivering his presentation.



Speech by Dr. N.T. Cheung, son of Professor Y.K. Cheung.



Professor Chao presenting a souvenir to Professor Buenfeld.



Group photo of Organising Committee members and distinguished guests at the Lecture.

Staff Awards



Professor F.T.K. Au received the Structural Excellence Award 2018 - R&D Award: Grand Award of the Structural Division of HKIE for the paper "X.C. Chen, Y. Zeng, F.T.K. Au and R.J. Jiang, Interaction of plastic hinges in prestressed concrete bridges with corrugated steel webs, Engineering Structures, Volume 150, Pages 359-372, 2017" at the Annual Dinner of the HKIE Structural Division on October 12, 2018.

Professor Z.Q. Yue won the second class award of Science and Technology Award of the 9th Chinese Society for Rock Mechanics and Engineering for the study of the "Science and Technology of the Large-scale Underground Engineering of the Longyou Grottoes in Zhejiang Province" in the category of Natural Science.

Since 2002, Professor Yue has actively participated in the investigation of these ancient man-caved rock caverns from geotechnical engineering and rock mechanics approach. The investigation had demonstrated the relics of the complete large rock caverns are the consequence of coincidental combinations of ancient human effort and natural factors. The full occupation of water with weak acidity in the large rock caverns with the soft surrounding rocks of weak alkalinity is found to be the main factor ensuring and preserving the caverns to have been stable and integral over 2000 years. The five un-watered complete rock cavern relics have been experiencing various deteriorations and small failures including cracks, seepage, small rock falls and delaminating ceiling rocks. Although these deteriorations have been repaired and stabilized effectively, the investigation found out that an entire roof collapse failure is highly possible in the near future to each of the five un-watered rock cavern relics. These findings are also invaluable for both long-term protection and preservation of the large rock cavern relics of national and international interests and importance to extend and enrich



The large internal space and high rock pillars of one of the near ground surface large rock cavern relics in Longyou county, Zhejiang Province.

the team's experience and knowledge on the long-term stability and integrity of man-made underground rock cavern engineering projects.



Professor Z.Q. Yue received the Second Class Awards from China Society for Rock Mechanics and Engineering.

Staff Activities

Professor H.H.P. Fang has delivered in recent months five invited lectures in the United States, Taiwan and Hong Kong. In late September, he was invited to deliver the annual Clifford W. Randall Distinguished Lecture at Virginia Polytechnic Institute and State University, Blacksburg, Virginia (photo), which was followed by another lecture at the Department of Biological and Agricultural Engineering of North Carolina State University, Raleigh, North Carolina; both seminars were on the subject of Developments and Applications of Anaerobic Technology in Japan and China. In November 2018, Professor Fang gave three additional lectures related to Food Waste Co-digestion at the Environmental Protection Department of Hong Kong Government, Industrial Technology Research Institute of Taiwan (ITRI), Hsinchu, Taiwan and National Cheng Kung University, Tainan, Taiwan.



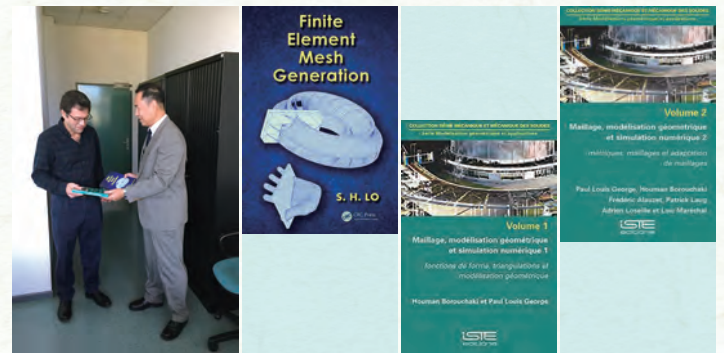
Visit to Université Technologie de Troyes (UTT), France

Between October 9 to 13, 2018, **Professor S.H. Lo** was invited to UTT to serve as the External Examiner of doctoral thesis, entitled "Modeling of indoor environments by real-time 3D 6-DoF reconstruction and extracting of 2D architectural plans". UTT is the major university in Troyes, which is the principal town of

Champagne in France. Making use of this precious opportunity in visiting UTT, research works and ideas in finite element mesh generation and 3D simulations were exchanged.



Université Technologie de Troyes.



Exchange of research work with Prof. H. Borouchaki.

Dr. W. Pan

- delivered an invited Plenary Speech entitled "Innovate or Stagnate" at the Symposium on Innovation organized by the Architectural Services Department of the HKSAR Government on December 6, 2018.



- delivered an invited Keynote entitled "A Productive, Sustainable and Smart Future of Construction" at the International Conference on Construction Futures at Wolverhampton, UK on December 20, 2018. Dr. W. Pan and a team of Ph.D. students attended and delivered presentations at the International Conference on Construction Futures at Wolverhampton, UK December 19-20, 2018.

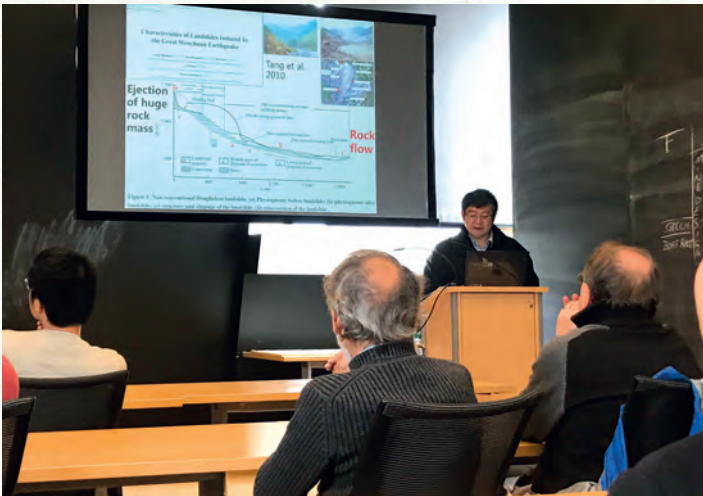


- delivered an invited Keynote entitled "Prefabricated and Modular Integrated Construction: Hong Kong Perspective" at the 5th Stanford CIFE Industrialized Construction Forum at Stanford University, US on February 21, 2019.
- coordinated and organized a delegation with 32 members from the HKSAR Government and the construction industry led by the Permanent Secretary for Development (Works) to visit the UK under the mission "Time to Change" during the period from February 24 to March 1, 2019.



Professor Z.Q. Yue

- presented a public lecture on "Mechanism of Giant Rock Ejection at Donghekou during 2008 Wenchuan Earthquake" on October 24, 2018 at Lassonde Mining Building, University of Toronto, Toronto, Canada.



- delivered a public lecture on "The 2008 Wenchuan Earthquake and Its Highly Compressed Gas Cause" on October 25, 2018 in the Department of Earth and Environmental Sciences, University of Waterloo, Waterloo, Canada.



Staff News

Dr. W. Pan was appointed Chairman of the Construction Workers Registration Board (CWRB) Data Analysis Committee with effect from January 2019 to June 30, 2020.

Dr. R.K.L. Su has been elected to fellowship by the Institution of Structural Engineers to recognise his significant contributions to structural engineering and the profession. Founded in 1908, The Institution of Structural Engineers is a world's leading professional body for structural engineering and has over 27,000 members worldwide.

Professor S.C. Wong

- was reappointed as a Member of the Advisory Council on the Environment, The Government of HKSAR, from January 1, 2019 to December 31, 2020.
- was reappointed as a Member of the Advisory Committee on Post-service Employment of Civil Servants, The Government of HKSAR, from September 1, 2018 to August 31, 2020.
- was reappointed as a Member of the Appeal Tribunal Panel (Section 45 of the Buildings Ordinance (Cap. 123)), The Government of HKSAR, from December 1, 2018 to November 30, 2021.
- was reappointed as a Member of the Development Committee of the West Kowloon Cultural District Authority for two years with effect from January 1, 2019.
- was elected as a Council Member of the Chartered Institution of Logistics and Transport in Hong Kong for two years with effect from October 1, 2018.
- was appointed as Chairman of Logistics and Transportation Discipline Advisory Panel and Member of Qualification and Membership Board of the Hong Kong Institution of Engineers for the term 2018-2019.

Updates on Project Mingde

For information about Project Mingde, please visit our official website at <http://www.civil.hku.hk/mingde/>.

Alumni are welcome to join Project Mingde and if you are interested to be part of us, please contact Dr. C.P. Wong at cpwryan@hku.hk (for projects) or Dr. K.H. Law at adalaw@hku.hk (for communications).

Kindergarten for Guigang Duling Primary School

In October, Dr. C.P. Wong led students from HKU and South China University of Technology visiting Duling Primary School.

This visit trip aimed to check the completed construction works of strengthening the teaching block, and discuss with our local contractor Boss Wu about the architectural and structural designs of the new toilet.

Phase 1 of Restoration and Expansion of Duling Primary School was accomplished successfully. The existing teaching block was strengthened by providing additional members to enhance its structural stability, and adding a new shelter to prevent rainwater leakage from the rooftop and to keep the second floor cooler. Numerous panoramic photos were taken on top of the new shelter to facilitate the architectural layout plan. The team also discussed with Boss Wu and the School Principal about the new toilet design particularly on the façade brick walls and the toilet flushing system. The proposed façade brick walls allow natural ventilation whilst ensuring privacy of users in the toilet. A water-recycling concept was suggested in the toilet flushing system to use the collected rainwater from roof and the hand-washing water from basins. The team will work on a scheme for these two environmental friendly features.

Another trip to Guigang was scheduled from December 27-28 with 9 students participated. Phase 2 of this project to build a new toilet was commenced. The team witnessed the setting out work for foundation construction. A surveillance camera was installed in the upper floor of the nearby teaching block to monitor the progress of the construction work online, and prepare a time-lapse video. In addition, a meeting with the local government officials was arranged for expansion of the red line boundary of Duling Primary School and realignment of the access road affected by the proposed kindergarten.



Additional structural frames and a new shelter were provided to the existing teaching block to enhance its stability and prevent rainwater leakage from the rooftop.



Setting out work for the toilet foundation construction.

Wangdong Footbridge

Professor L.G. Tham and Ir. Robin Yip visited Rongshui with 3 Civil Engineering students for Wangdong footbridge in December. This footbridge was the major river crossway to Wangdong Primary School before its collapse, which was caused by severe flooding. This trip aimed to investigate the structural feasibility of the proposed catenary bridge by studying the similar bridges in the vicinity of the site. The preliminary structural drawings of the restoration scheme were prepared, and the construction cost was estimated accordingly. The team discussed with the local government official Mr. Liu and contractor on site for the details and programme of construction works, to be commenced this summer.



Site visit of similar catenary bridges nearby Wangdong Village.

Name of students joined the site visits for various projects:

October 19-21 (Guigang):

CHAN Kwan Long, TONG Wai Sing Amos (Arts),
ZHANG Xinyu (Economics and Finance).

December 27-28 (Guigang):

CHAN Wai Hang, HO Yuk Pui, NG Ka Hin, NG Pak Lun,
TSOI Yu Tung, YANG Wai Kin, CHAU Hok Hei Ryan (Engineering),
CHAN Chi Ming (Engineering Science),
ZHAO Fangyuan (Architecture).

December 27-30 (Rongshui and Wangdong):

NG Tsun Yu, SIU Ming, WONG Hon Sum.

Student Awards

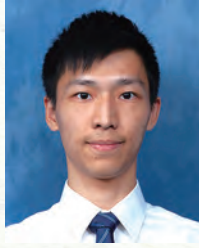
Mr. Chan Chun Hong, Mr. Law Shing Cheong, Mr. Law Tsz Wa, Mr. Sin Chak Wa, Mr. Wong Fai Ho Dexter, Mr. Yu Chung Yin (2018 Graduate) and Ms. Keung Ming Sze (EngSc) were awarded the Ms. Chu Yuk Baw Prize in Civil Engineering (Capstone Design Project).

Miss Cheung Chin, Mr. Lam To Lun Jeffrey, Mr. Leung Shun Hei (CivE 4 18-19) and Mr. Wong Tsz Fung Mike (CivE 3 18-19) were awarded the YS and Christabel Lung Undergraduate Scholarship for Engineering Students (Renewal).

Mr. Cheung Yu Lung (CivE 3 18-19) was awarded the CMA and Donors Scholarship 2018-19.

Mr. Fei Fan (2018 Graduate) was awarded the Chow Che King Prize 2017-18 and the Gammon Construction Limited Prize in Civil Engineering 2017-18.

Mr. Kot Yiu Kwan (2018 Graduate) was awarded the Ms Chu Yuk Baw Prize in Civil Engineering (Final Year Project) and the HK Cheng Prize in Civil Engineering 2017-18.



Mr. Leung Shun Hei (CivE 4 18-19) was awarded the Hong Kong University Alumni Prize 2017-18.

Mr. Lo Man Hon (CivE 4 18-19) was awarded the Tai Tung-Ngok Prize in Civil Engineering 2017-18.

Mr. Mak Pak Long (CivE 3 18-19) was awarded the Ho Lu Kwong in Civil Engineering 2017-18.

Ms. Meng Yue (2018 Graduate) was awarded the Wing Lung Bank Ltd. Prize in Civil Engineering 2017-18.

Mr. Ng Tsz Wai Jason (2018 Graduate) was awarded the Environmental Engineering Prize 2017-18.

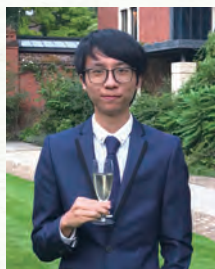
Mr. Pan Yiyuan (CivE 3 18-19) was awarded the CL Tse Prize in Civil Engineering.

Miss Pang So Ming (CivE 4 18-19) was awarded the Providence Foundation Outward Bound Training Awards 2018-19.

Mr. Ting Yu Lap Timothy (CivE 2 18-19) was awarded the Walter Brown Memorial Prizes in Mathematics 2017-18.

Mr. Wong Tung Ngai (2018 Graduate) was awarded the Ms Chu Yuk Baw Prize in Structural Engineering.

Mr. Yeung Chin Hou (CivE 3 18-19) was awarded the Edward Keller Achievement Award in Civil Engineering 2017-18 and the HKU Engineering Alumni Association Scholarship 2018-19.



Mr. Zhao Tianhao (2018 Graduate) was awarded the Civil Engineering Project Prize 2017-18.

"Introducing and Demonstrating Earthquake Engineering Research in Schools" Competition

Our postgraduate team got the first prize in a competition entitled "Introducing and Demonstrating Earthquake Engineering Research in Schools" (IDEERS) 2018 held at the

Taiwan National Center for Research on Earthquake Engineering on September 15, 2018. The team was supervised by Dr. K.L. Su. The competition was jointly organized by NCREE, National Applied Research Laboratories (NARLabs) and British Council (BC). In addition, our students also got the following awards:

1. Innovation Award for Seismic Isolation and Energy Dissipation
2. Most Structural (Engineering) Design
3. Most Architectural (Art) Design
4. Best Design Concept Exhibition
5. Best Presentation Award

The official website of the competition is <https://www.ncree.org/ideers/2018/#Home>.

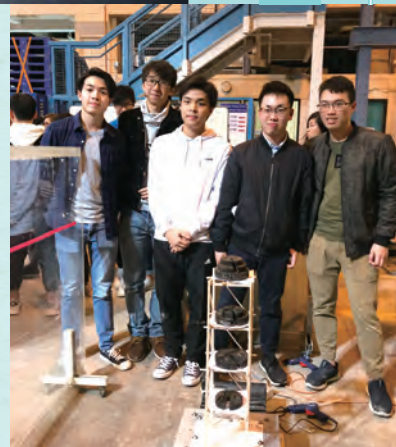
The related local news is shown here <https://n.yam.com/Article/20180915617541>.



Model Building Competition 2019

Our undergraduate students, Mr. Chan Ming Him, Mr. Ho Kun Chung Quincy, Mr. Ho Yu Hin, Mr. Chu Kit Yuen and Mr. Chung Pun Nap (HKUC Team) won the champion in the Model Building Competition 2019 organized by the Institution of Civil Engineers Hong Kong Association Graduates and Students Division (ICE HKA G&S) on 19 January 2019. The theme for this year's competition was "Introducing and Demonstrating Earthquake Engineering Research in Schools".

Model Building Competition is an annual competition in which civil engineering undergraduates engage themselves in the design and construction of models made of wooden sticks. This resembles real-world civil engineering structures. The participating teams compete against one another by building the lightest and strongest model which should fulfil specific design requirements at the same time. Students also demonstrate their creativity and presentation skills through this competition, and consolidate their engineering knowledge by putting their design to the test.



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Silver Award of The Chartered Institute of Building (Hong Kong) Outstanding Paper Awards 2018

HKU Civil Engineering HKPF students Ms. Yi Yang and Ms. Mi Pan, both under supervision by Dr. W. Pan, won the Silver Award of The Chartered Institute of Building (Hong Kong) Outstanding Paper Awards 2018.



Second HKU Interdisciplinary Research Competition 2018

Ph.D. students Ms. Yi Yang, Mr. Ken Zhang and Ms. Yue Teng, under supervision of Dr. W. Pan, won the Second Run-up of the Second HKU Interdisciplinary Research Competition 2018.



RGC Research Impact Fund Project

A team led by Dr. W. Pan has been awarded a RGC Research Impact Fund project in January 2019 which is entitled "Modular integrated construction (MiC 2.0+) for quality and efficient tall residential buildings through advanced structural engineering, innovative building materials and smart project delivery".

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