

ENGAGE

ENTREPRENEURS AND STARTUP 2.0

The Faculty of Engineering at the Chinese University of Hong Kong has the tradition of nourishing innovators and entrepreneurs in advancing science and technology. This issue of ENGAGE shares with you some of the exciting stories of our new generation of graduates and their pathways to enhancing the quality of humanity at large.



Kuan Wen LOU

MSc (Biomedical Engineering), 2019
Company name: King's Phase Technologies
Current position: Founder



We are a health technology company providing insight into your health with a breath. Beagle is our breath analyzer that helps people understand their fat metabolism and more. King's Phase Technologies was founded in 2019 and within a year we created our prototype breath analyzer. However, days before our product launch we found a fatal mistake that's neglected by the industry and even the academia. We scrapped the launch.

We went back to the drawing board and solved the problems other people failed to identify. What we have today is the "Beagle", it is a device with the precision and versatility of laboratory equipment in the palm of your hand. We started out trying to measure breath ketone so we can track our fat metabolism but we ended up with a device that has the potential to diagnose diseases.

Beagle can analyze human breath without the user's lips ever touching the device. Simply with a huff, Beagle can detect the user's metabolic rate, alcohol intoxication level, risk of bacterial infection, and more. Beagle is capable of detecting a wide range of biomarkers thanks to its patented gas scanning technology.

Beagle is suitable for fitness coaches and dietitian who wants a quick and easy way to provide scientific insight into their clients' health condition.



Chun Kit HO

BSc (Computer Science), 2018
Company name: Capmi Technology Limited
Current position: Director



Capmi is a dedicated team of visionary engineers and scientists united by one goal - to redefine the motion capture paradigm, by creating innovative, affordable, and accessible motion capture products. With Capmi motion capture technology, we bring advanced technology to the market at a consumer-level price.

Supported by: Cyberport, HKSTP, CUHK

Projects:

- 3D animation creation
- Sports Analysis
- Immersive training system for Chinese massage and acupuncture
- Games for Stem education

Linkai LI

BEng (Electronic Engineering), 2015
Company name: Orka Inc.
Current position: Co-founder



In the 7 years after CUHK I worked in academia, industry, and most recently, co-founded a company developing the world's first AI-powered hearing aid product. If you asked me 7 years ago, as a graduate student, I would never have imagined taking the full entrepreneurial plunge and building my own business. Research is my most passionate addiction I developed at University, after that I went onto Stanford University for masters study and then to Siemens Healthcare working as a systems engineer. Witnessing the innovative bridge between technology and commercial products that changes people's life at Silicon Valley, I moved to Shanghai to co-found ORKA. We developed the world's first AI-powered hearing aids, and aim to enable all hearing-impaired people live a better life. Orka has successively obtained investments from Tencent, Sequoia, and etc., totaling tens of millions of US dollars, and ORKA had grown from a group of four people to over eighty now. The journey from a researcher to an engineer, and then to an entrepreneur is fascinating that I experienced how different it is between making a classroom project and designing a commercial product.



Wai Keung KUO

BEng (Information Engineering), 2015
Company name: R-Guardian
Current position: CEO and Co-founder



During my university study, I worked very hard to develop an anti-loss system to safeguard personal belongings. Eventually, I zeroed in on the low-energy-consumption Bluetooth technology and developed a smart monitoring system by embedding a chip in the valuables.

After the exchange at Peking University, I joined the CUHK Pre-incubation Centre (Pi Centre). Under the guidance of the Centre staff and with their nomination, my team participated in eight competitions in a year, winning the championship in the Professor Charles K. Kao Student Creativity Awards and the Vice-Chancellor's Cup of Student Entrepreneurship. Going on to represent CUHK, we kept up the winning streak in external competitions, including the Asia Venture Challenge and the Challenge Cup of the China College Students' Entrepreneurship Competition.

One of the competition awards was a Fast Track pass for the Hong Kong Science Park, giving me access to a rental-free office at the Park and putting my startup business on a new journey. I expanded my business to Mainland, and after completing multiple financing rounds, my business valuation has exceeded 100 million HKD. Like sailing with a favorable wind, my company eventually became a national high-tech enterprise in 2019. It entered the top ten global algorithm practice models in 2021 and was rated as one of China's top 100 excellent enterprises in 2022.

I am honored to be listed in the Forbes China 30 under 30 in 2019, "Hurun Report" Entrepreneurial Leaders Under 30, the Annual China New Business Leader in 2020, and the "Moving Hong Kong Person" in 2022. Whenever I am asked if this startup shortcut is typical or exemplary, I believe each entrepreneur has a different path. Their only thing in common is that this path is invariably thorny. Entrepreneurs must adapt to or enjoy the process.

Kun LI

PhD (Systems Engineering and Engineering Management), 2018
Company name: SpeechX Limited
Current position: Co-founder and CEO

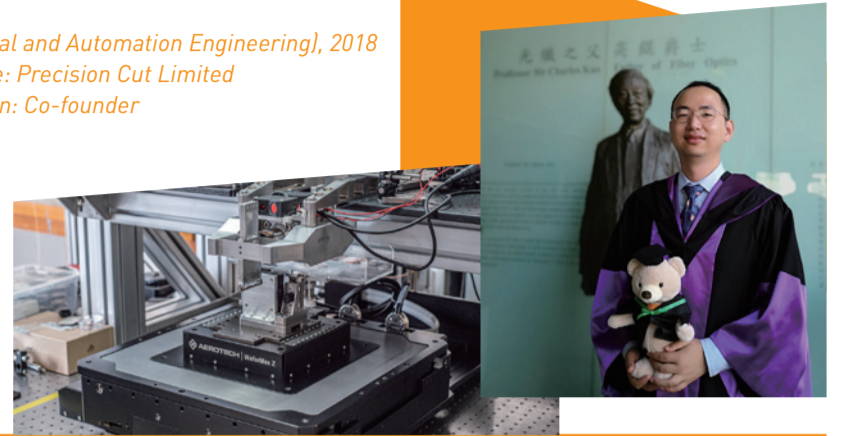
SpeechX Limited focuses on developing AI technologies for education, especially for language teaching and learning. We believe that the combination of AI and language education will thoroughly empower language teaching and learning experience. Our mission is to make language education more efficient, productive and enjoyable.

LingoTask, developed by SpeechX, is an AI-powered e-platform for English teaching and learning. It enables teachers to easily create, assign and mark all tasks in one place; with our mobile application, students can practice English speaking, listening, reading and writing.

LingoTask integrates multiple AI technologies, such as Text-to-Speech (TTS), Mispronunciation Detection and Diagnosis (MDD), Optical character recognition (OCR), Grammar Checker, etc. These AI technologies can provide instant and accurate feedback.

Xinlei FU

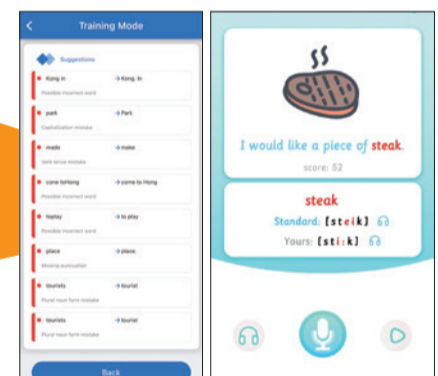
PhD (Mechanical and Automation Engineering), 2018
Company name: Precision Cut Limited
Current position: Co-founder



During my PhD study in MAE, my research work mainly focused on theoretical modeling of piezoelectric materials and structures. Getting through the PhD training, I have been thinking about how to apply my knowledge into practical applications. After graduation, I was offered a postdoc position to develop a vibrating blade microtome for precisely sectioning ultrasoft tissues and materials. With my expertise on vibration, the new microtome design is quite successful. We implemented an active vibration control module in the microtome which realizes the best tissue sectioning quality among all the competitors. The invention was awarded the gold medal in Geneva International Exhibition of Inventions.

As a result, I established Precision Cut Limited with other team members to bring our new microtome product to the market. We are grateful for the TSSSU support from CUHK so that we have the kick-start capitals. Precision Cut Limited is dedicated to developing solutions of precision tissue sectioning and imaging. We have already signed IP licensing agreement with CUHK and developed two product lines, vibrating blade microtome and tumor slice based in vitro drug screening platform.

With our cutting-edge technology, our collaborator in Boston University successfully used our product to precisely section human brain for 3D imaging. Our collaborator in Taiwan University Hospital successfully used our product to precisely section fresh tumor for in vitro culture. Our collaborator in CUHK successfully used our product to section ultrasoft expansion tissue of mouse brain for neuron research, which has not been achieved before.



Therefore, teachers can grade assignments faster and more accurately; while students can develop self-directed learning in a fun and effective way.

SpeechX Limited was founded in Hong Kong and Shenzhen in 2016. Our team members mainly come from the SEEM department of CUHK. We received the Hong Kong Cyberport Creative Micro Fund (CCMF) in 2016, joined the Cyberport Incubation Program in 2017, and Hong Kong AI Lab Accelerator in 2022. We also won many awards from mainland China, e.g., the 5th place in the China Innovation and Entrepreneurship Competition in 2017, the 2nd place in the Shenzhen Entrepreneurship Competition in 2020, China AI Education Application Award in 2020, Shenzhen AI Technology Invention Award in 2021, etc. We have raised more than 30 million RMB in venture capital. Our AI products have served more than millions of students.

THREE ENGINEERING PROFESSORS ELECTED IEEE FELLOWS FOR 2023



Three professors from Faculty of Engineering have been elected Fellows of the prestigious Institute of Electrical and Electronics Engineers (IEEE) in the class of 2023. They are Prof. Man-cho SO (left) from the Department of Systems Engineering and Engineering Management, Prof. Fung-yu YOUNG (middle) from the Department of Computer Science and Engineering, and Prof. Li ZHANG (right) from the Department of Mechanical and Automation Engineering. Prof. So was elected for his contributions to optimisation in signal processing and communications, while Prof. Young was accredited for her research on electronic design automation in VLSI (very-large-scale-integration) physical design, and Prof. Zhang was admitted for his contributions to micro-/nanorobot swarms and platforms for translational biomedicine. There are currently 41 IEEE Fellows in the Faculty of Engineering at CUHK.





OUTSTANDING ACHIEVEMENTS (JUL-DEC 2022)

BME Undergraduate Student won CUHK Vice-Chancellor Scholarship

CUHK has given out eight awards of Vice-Chancellor's Scholarship for Excellence to distinguished students in recognition of their outstanding achievements. Undergraduate Year 2 student, Jarinyagon Chantawannakul, was one of the recipients. "The scholarship recognises my past accomplishments, financially supports my educational pursuits, and opens me up to new opportunities. Although my career path is still unclear, I am sure I will work in the biomedical community," remarked Jarinyagon.



Prof. Jimmy LEE Conferred Distinguished Fellow of the Hong Kong Computer Society 2022

Prof. Jimmy LEE was conferred the Distinguished Fellow title by the Hong Kong Computer Society (HKCS) at its annual Gala Dinner on November 21, 2022. The award

of Distinguished Fellowship was established to recognise members who have made an outstanding contribution to HKCS and the IT community, and significant achievements and standing in her/his area of work. Throughout HKCS's 52 years of history, less than 30 Distinguished Fellow titles were conferred.

Prof. Jianbin XU named Most Highly Cited Researchers

Prof. Jianbin XU, Department of Electronic Engineering has earned the honour of being named in the list of "Highly Cited Researchers 2022" as among the world's top researchers who has demonstrated significant and broad influence reflected in their publication of multiple papers, highly cited by fellow academics. Of the world's population of scientists and social scientists, Highly Cited Researchers™ are 1 in 1,000. The 2022 list includes 6,938 highly cited researchers in various fields.



Dr. Lei TONG Awarded RGC Postdoctoral Fellowship Scheme 2022-23

Dr. TONG Lei, an EE Postdoctoral Fellow in the research group of Prof. Jianbin XU has been recently awarded for the RGC Postdoctoral Fellow 2022/23, which has been established by The Research Grants Council of Hong Kong to encourage doctoral graduates in pursuing career in research and provide promising researchers with support at a pivotal time in their very early career. More detail of the awardees is available at https://www.ugc.edu.hk/eng/rgc/funding_opport/pdfs/awardees.html.



BME Scholars Developed Novel RNA Nanoparticles for Targeting and Alleviating Atherosclerotic Plaque

A team led by Prof. Jonathan CHOI, has developed a novel RNA nanoparticle to offer a potentially safe, effective treatment for atherosclerosis. Research has shown that this RNA nanoparticle can naturally target receptors of plaque cells for delivering genes to atherosclerotic plaques, while alleviating atherosclerosis by modulating genes related to atherogenesis, consequently reducing and stabilising plaque without inducing severe toxicity. It paves the way for the use of nucleic acid nanotechnology to treat cardiovascular diseases. For details, please visit <https://www.pnas.org/doi/10.1073/pnas.2201443119>.

Prof. Raymond YEUNG Elected NAI Fellow

Prof. Raymond Yeung from the Department of Information Engineering was elected NAI Fellow in 2022 for his "demonstration of a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on the quality of life, economic development, and welfare of society."

The National Academy of Inventors (NAI) is a member organization comprising U.S. and international universities and governmental and non-profit research institutes, with over 4,000 individual inventor members and Fellows spanning more than 250 institutions worldwide.



IE Team Won the Best Paper Award Runner-Up at ACM MobiCom 2022

A paper titled "VIPS: Real-Time Perception Fusion for Infrastructure-Assisted Autonomous Driving," co-authored by Prof. Zhenyu YAN and Prof. Guoliang XING's team (both from the Department of Information Engineering), received the Best Paper Award Runner-Up at the 28th Annual International Conference on Mobile Computing and Networking (ACM MobiCom 2022). The first author of this paper, Shuyao SHI, is a Ph.D. student co-supervised by Prof. Xing and Prof. Yan. This work is an outcome of the Smart Lamppost project that Prof. Raymond YEUNG and Prof. Guoliang XING have worked on for over three years.



Best Student Paper Award in MARSS2022

Mr. Moqiu ZHANG, Ph.D. student of Prof. Li ZHANG from MAE Department, won the Best Student Paper Award for his paper entitled 'A doppler and B-mode hybrid ultrasound tracking method for microcatheter navigation in noisy environments' in the 2022 International Conference on Manipulation, Automation and Robotics at Small Scales (MARSS2022).



Silver Medal in the 8th China International College Students' "Internet+" Innovation and Entrepreneurship Competition

Prof. Shih-Chi CHEN, Dr. Xinlei FU, Dr. Qiuyuan ZHONG and Dr. Xiayi XU from MAE Department received Silver Medal for their project entitled "A Novel Tissue Sectioning System for 3D Imaging and Drug Screening" in the 8th China International College Students' "Internet+" Innovation and Entrepreneurship Competition.



ROBOTICS, STEM AND GREEN INNOVATION (PHASE 3)



InnoCarnival 2022

Through displays, online platform and on-site robotic games in this year InnoCarnival, we could no doubt arouse public awareness in STEM education and green technology to the public. From Oct 22nd to 30th, winning teams from "Mitsubishi Electric Green Innovation Competition 2022" were invited to showcase their designs and give live demonstration to all visitors. To create synergy, we have events co-organized with The Chinese University of Hong Kong and Innovation and Technology Student Club. This year we successfully attracted more than 5000 visitors and VIP guests to join, including but not limited to Secretary for Innovation and Technology Mr. Dong SUN, Commissioner for Innovation and Technology, Ms. Ting Ting PUN, The Dean of Hong Kong Academy of Science Prof. Lap Chee TSUI.



Visit by Secondary Schools Students Coordinated by Bank of China

More than 30 secondary school students from four schools visited the facilities of the Faculty of Engineering on 5 Nov 2022. The tour was coordinated by the Education Ecosystem of Bank of China (Hong Kong)'s Institutional Business Department. During the visit, in addition to touring around the faculty's state-of-the-art facilities including Radio-frequency Radiation Research Lab and ER Lab, the students joined a sharing and demonstration session led by the winning team at the Asia-Pacific Broadcasting Union's Asia-Pacific Robot Contest (ABU Robocon). After listening to the tips on how the team made tireless efforts on the path of success, students had an exhilarating experience trying to control the robots with which the Robocon Team had scooped the Championship.

Robocon Champion Team Sharing and MAE Lab Visits

Robocon Hong Kong and The ABU Asia-Pacific Robot Contest Champion Team Member from our faculty had shared their experience in preparing large scale competition and their knowledge in robotics etc to local primary and secondary school students. The sharing and visit will provide students a broader view in university level competition.



INNOVATION AND TECHNOLOGY STUDENT CLUB



To prepare Hong Kong for the upcoming challenges in developing into a knowledge-based economy, the Faculty of Engineering of The Chinese University of Hong Kong (CUHK) has founded the "Innovation and Technology Student Club" (ITSC) jointly with the Innovation and Technology Commission (ITC). Our vision is to nurture young talents in becoming future technological elites, who will bring about innovative and technological advancement to our city. Since May 2009, over 2,000 secondary students with similar interests in science and engineering have become our club members.

In the 2022 InnoCarnival, with the help of Prof. Kam Fai WONG, ITSC recruited nearly 200 secondary students to become members. They will become young, creative, and energetic young forces with ideas to shape a better world. Second, this carnival game was created by the members themselves. It is built based on the game of dropping the ball and learning about programming like circuit boards. It also aroused a lot of public interest in the association. This time brings innovation and imagination to them, and through this hands-on experience, they become problem solvers with great potential to generate positive social change in the world.



ITSC WINTER CAMP

The ITSC Winter Camp is held on 17-18th December 2022 at Wu Kai Sha Youth Village and CUHK campus. The camp aims to provide hands-on experience to the members by constructing a light with LED. As intended to be a focused and concentrated workshop, lessons and in-class activities are held to familiarise participants' knowledge in welding on PCB board and mechanics. With the visit to CUHK ROBOCON LAB, which mainly comprises undergraduates from CUHK, the participant can catch a glimpse of the curriculum of engineering majors while touching knowledge about the robot and a taste of being an engineer.

ITSC is holding a range of activities like technology ambassador, camp and workshops in the coming months. You may review our past events and learn more about them on our Facebook <https://www.facebook.com/ITSC.HK> page and IG https://www.instagram.com/itsc_cuhk/.

If you are a secondary student, you are welcome to join our activities and sign up for ITSC membership through online application <https://forms.gle/AjFV8bVPi8PrWG3cA>. If you become our member, most activities will be free of charge.



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