



NEWSLETTER
ISSUE 5

STATE KEY LABORATORY OF ADVANCED DISPLAYS AND OPTOELECTRONICS TECHNOLOGIES



香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

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WELCOME

ABOUT US

The State Key Laboratory of Advanced Displays and Optoelectronics Technologies (hereafter SKL) is directed by Prof. Ching W. Tang, IAS Bank of East Asia Professor and Chair Professor in the Department of Chemistry, Department of Electronic and Computer Engineering, Department of Physics at the Hong Kong University of Science and Technology (HKUST). The SKL serves as a bridge connecting HKUST and research institutes and enterprises in mainland China and facilitates both local and national scientific development through close collaboration.

OUR OBJECTIVES

- Become the leading display and optoelectronics research center in China and the world
- Generate intellectual properties on display and optoelectronics technologies
- Collaborate with the display industry to develop and commercialize SKL's displays and optoelectronics technologies
- Create a world-class platform for exchanges between Chinese and foreign researchers on display and optoelectronics research

The SKL focuses on exploring cutting-edge and highly industrial-applicable display technologies. There are five core areas: (1) thin-film transistors (TFTs) for active matrix displays; (2) third generation organic light-emitting diodes (OLEDs); (3) liquid-crystal displays (LCDs); (4) micro-LED displays; and (5) flexible displays and nano-materials. In this year, micro-LED is as a research area due to its many advantages.

The SKL places particular emphasis on “green displays” such as active matrix OLED (AMOLED) displays, field sequential color LCDs (FS-LCDs) and bistable LCDs, all of which feature low power consumption. In addition to conducting research, the SKL also offers training and short courses for enterprises in mainland China, as well as organizes seminars and conferences with international research institutes.

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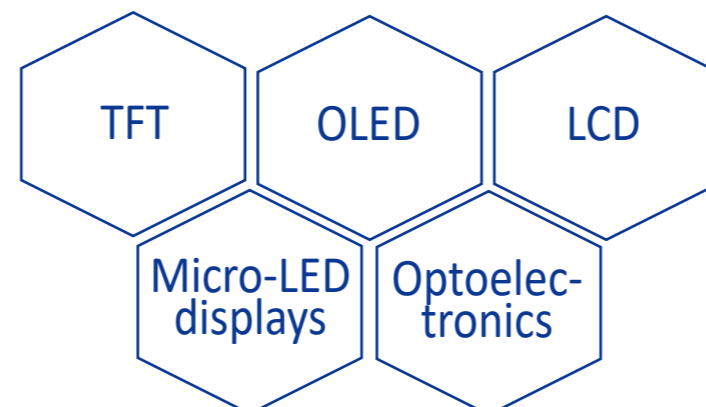
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FIVE CORE RESEARCH ASPECTS



Facilities

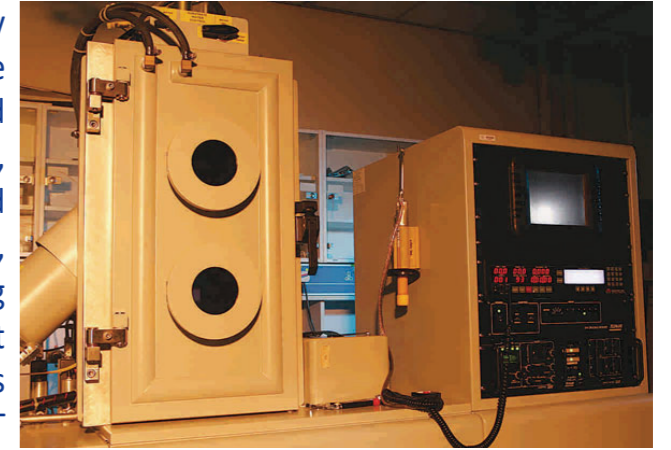
Center for Display Research (CDR)

The Centre for Display Research (CDR) at HKUST was established with seed funding from the Hong Kong Trade and Industry Department. The CDR provides technical support services for local LCD manufacturers, conducts research on advanced displays of value to the local industry and trains students with hands-on experience in LCD manufacturing for the local industry.



Materials Characterization & Preparation Facility (MCPF)

The MCPF is a central facility intensively serving academic researchers & postgraduate students at the School of Science and School of Engineering for the preparation, characterization and analysis of advanced materials. In addition to serving HKUST, MCPF also provides services to Hong Kong sister institutions and clients of government laboratories and regional industries. It has been an indispensable central facility at HKUST since the university's establishment.

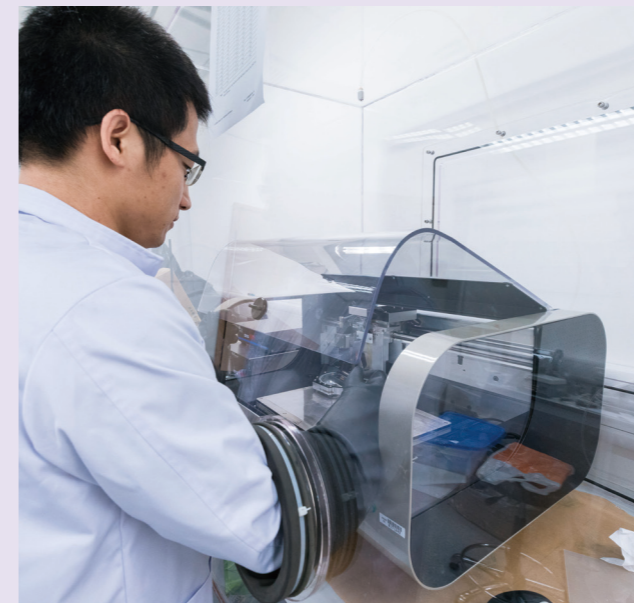


Nanosystem Fabrication Facility (NFF)



The Nanoelectronics Fabrication Facility (NFF) at HKUST is the first microfabrication laboratory at a tertiary institution in Hong Kong. The mission of the NFF is to provide facilities for HKUST faculty and students to conduct teaching and research, particularly in new discrete semiconductor devices, novel microsensors and microactuators, advanced nanoelectronics process technology and application-specific integrated circuits (ASIC).

Organic Electronics Laboratory (OEL)



The Organic Electronics Laboratory has a floor space of 1,030 square meters and resides in the newly-opened Cheng Yu Tung Building. OEL is a brand new laboratory managed by Prof. Ching W. Tang, IAS Bank of East Asia Professor and Chair Professor in the Department of Electronic and Computer Engineering. A cluster tool has been newly installed. It comprises a central transfer chamber for substrate delivery and five detachable process chambers for device fabrication. OEL provides a platform for researchers to study how OLED materials degrade over time and to produce OLED devices with greater efficiency and longer lifetime.



Major Events & Milestones

Visit by Innovation and Technology Bureau (16 June, 2021)

International Conferences and Seminars



The 19th International Meeting on Information Display

Gyeongju, Korea
27-30 Aug 2019

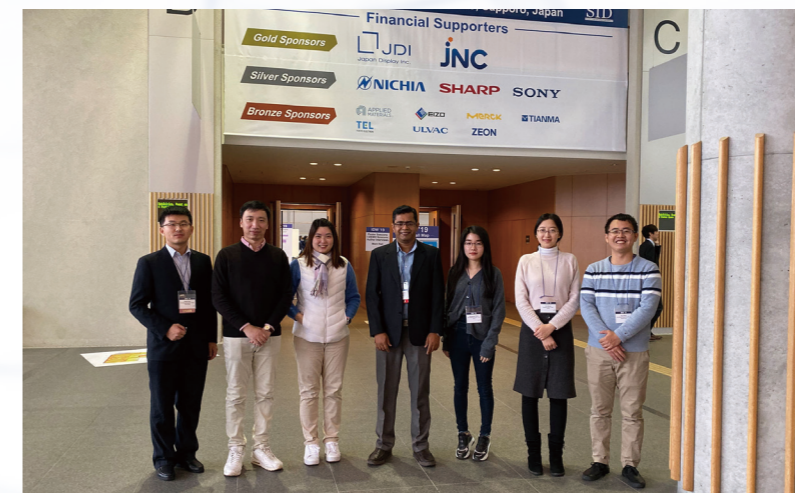
The IMiD is a premier conference for leaders from academia and industry to meet, publish results, and share their knowledge in the information display. The conference includes keynote addresses, regular presentation sessions, tutorials, workshops, a special exhibition, and young leaders conference.

Distinguished Chinese Scientists Lecture Series

Hong Kong Science Museum
1 Nov 2019



Prof. Hoi-Sing Kwok was invited as one of the three speakers at the 2019 Distinguished Chinese Scientists Lecture Series held at the Hong Kong Science Museum for his outstanding work in LCD science and technology.



International Display Workshops 2019

Sapporo, Japan
27-30 Nov 2019

The three-day conference featured 132 invited presentations, 145 oral presentations, and 211 poster presentations. IDW encourages aggressive research and development of display technologies throughout the world and especially in the Asian region.

International Conference on Display Technology, ICDT2020

Wuhan, China & Zoom
11-14 Oct 2020



International Conference on Display Technology (ICDT2020) was held in Wuhan. The two-day seminar report included 17 technical fields. More than 1,000 people participated in the conference, including 150 overseas online participants.

International Workshop on Advanced Display Materials

January 22, 2021 (Friday)



International Workshop on Advanced Display Materials

HKUST & Zoom
22 Jan 2021

The International Workshop on Advanced Display Materials was held at the Hong Kong University of Science and Technology on January 22, 2021, in Mixed Mode. It focuses on the advances in semiconductor nanomaterials, Perovskite materials, OLEDs, and polarized LEDs, etc.

Visitors for Academic Exchange



China Resources Group

8 Jan 2020



Solomon Systech Limited

4 Nov 2020



Mr. Masanori Nakagawa, Professor of Kyoto Prefectural University of Medicine

16 Jan 2020



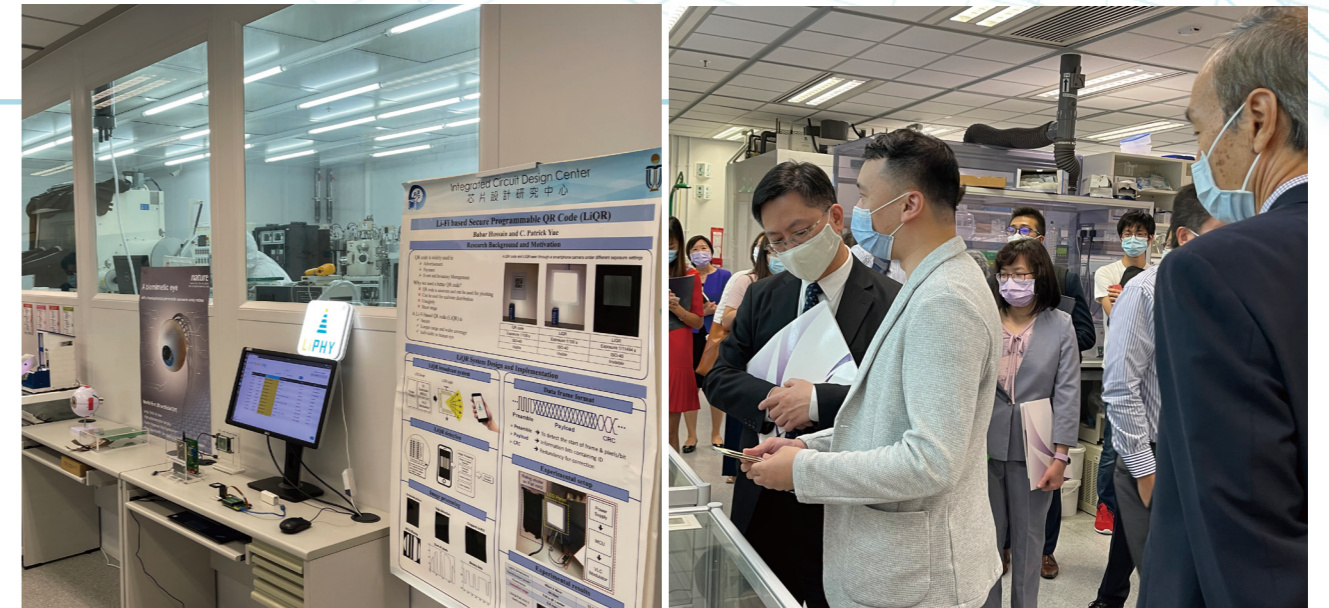
Mr. Irons Sze Wing Wai, Executive Director of Hang Tung Resources Limited

23 Mar 2021



Liaison Office of the Central People's Government in the Hong Kong Special Administrative Region

24 Mar 2021



Beijing - Hong Kong Academic Exchange Centre

8 Jun 2021



Innovation and Technology Bureau

16 Jun 2021



Achievements

Prof. Kei May Lau Became the First-Ever Woman Recipient of IET J. J. Thomson Medal for Electronics

9 Nov 2020



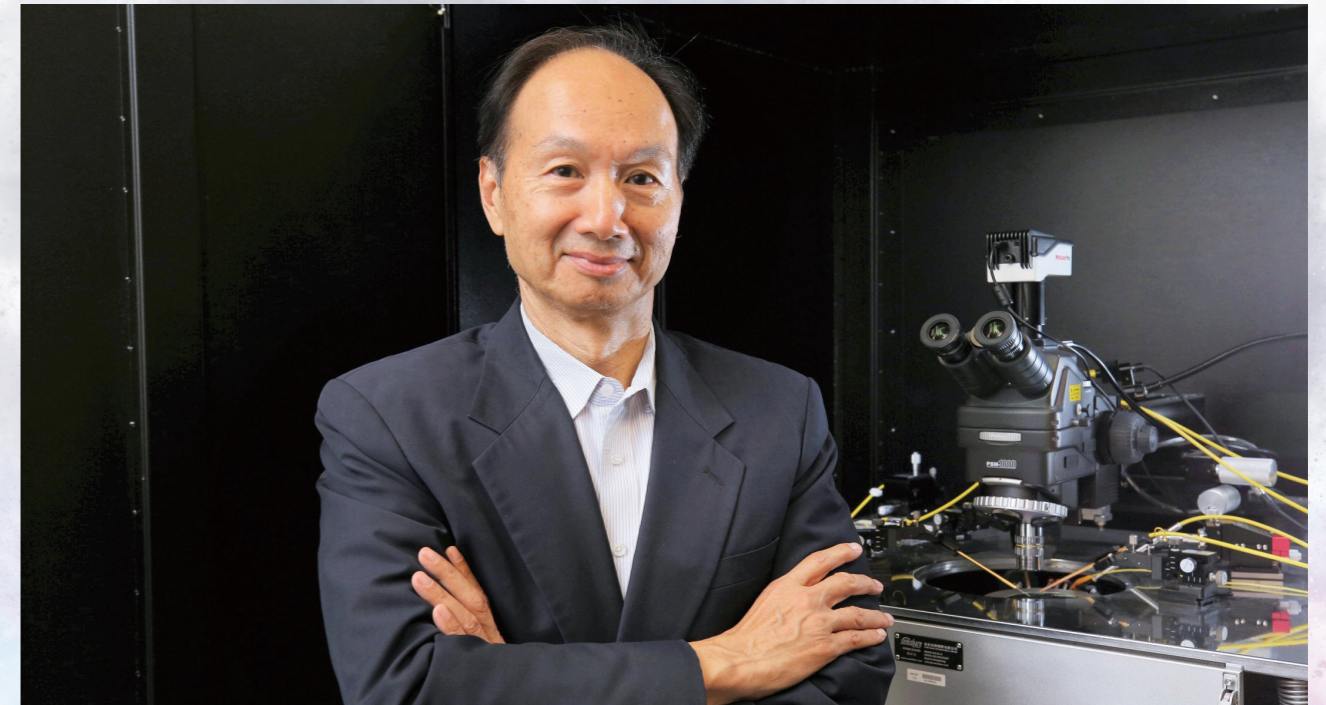
Prof. Kei May LAU, Chair Professor of Electronic and Computer Engineering, has been awarded the 2020 J. J. Thomson Medal for Electronics by the Institution of Engineering and Technology (IET) for her fundamental work in compound semiconductor materials and device physics.

Prof. Lau is the first woman winner of this prestigious international accolade since it was first presented in 1976.

Her work has not only led to the development of technologies critical to present-day energy-efficient and high-performance photonics and electronics, but also had major impact on current high-speed and low power optoelectronic devices for ubiquitous internet communication. She is one of the few female world-renowned researchers in the electronics and optoelectronics technology sector, and serves as a prominent role model for generations of women engineers entering this promising field.

Prof. KWOK Hoi-Sing Named a Fellow of National Academy of Inventors

10 Dec 2020



Prof. KWOK Hoi-Sing, Executive Director of State Key Laboratory on Advanced Displays and Optoelectronics Technologies, has been elected a 2020 Fellow of the National Academy of Inventors (NAI), a US non-profit organization dedicated to encouraging inventors in academia.

The NAI Fellows Program highlights academic inventors who have demonstrated a spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on the quality of life, economic development, and the welfare of society. Election to NAI Fellow is the highest professional distinction accorded solely to academic inventors.

A total of 175 prolific academic innovators from 115 research universities and governmental and non-profit research institutes worldwide are elected to the 2020 fellow class. They collectively hold over 4,700 issued US patents. Among them are recipients of the US National Academies of Sciences, Engineering, and Medicine, American Academy of Arts & Sciences and Nobel Prize, as well as other honors and distinctions. They will be inducted at the 2021 Fellows Induction Ceremony at the NAI 10th Annual Meeting in June in Tampa, Florida.

Prof. Zhaojun Liu led SiTan Technology to win the championship in 2020 One-Million-Dollar Entrepreneurship Competition

20 Dec 2020



Prof. Zhaojun Liu (Right 2) in 2020 One-Million-Dollar Entrepreneurship Competition.

Prof. Zhaojun LIU, Adjunct Assistant Professor of Electronic and Computer Engineering, led SiTan Technology to win the championship in "HKUST-Yuexiu Group 2020 One-Million-Dollar Entrepreneurship Grand Final Competition".

Shenzhen SiTan Technology Limited is a leading information display company. SiTan was founded in 2018 by Dr. Chengfeng Qiu, Dr. Xiaowei Sun, and Dr. Zhaojun Liu. The target of SiTan is to realize mass production of semiconductor displays and provide total

solution for mobile displays, AR/VR, and large screens.

It is reported that a total of 1826 projects participated in the eight competition areas of the event, involving more than ten fields such as artificial intelligence, big data, biomedicine, advanced manufacturing, Internet of Things, and smart cities. There are eight competition regions including Beijing, Guangzhou, Shenzhen, Yangtze River Delta, Foshan, Zhongshan, Hong Kong and Macau.

Dr. Sunbin Deng won the Distinguished Paper Award at SID Display Week 2021

17 May 2021

Dr. Sunbin DENG, Research Associate at State Key Laboratory of Advanced Displays and Optoelectronics Technologies, received Distinguished Paper Award at SID Display Week 2021 for the paper "A cost-effective fluorination method for enhancing the performance of metal oxide thin-film transistors using a Fluorinated Planarization Layer".



Prof. Man Wong won the 2021 Slottow-Owaki Prize at SID Display Week 2021

17 May 2021



Prof. Man WONG received 2021 Slottow-Owaki Prize of the Society for Information Display (SID). The Slottow-Owaki Prize recognizes outstanding contributions to the education and training of students or professionals in the field of electronic displays. Prof. WONG is highly regarded in the display industry for his prolific work in the field of thin-film transistors (TFT), roughly 350 out of his total 491 journal and conference publications are related to the technology.



Technology Transfer

Companies founded by SKL Members



Hong Kong Innovative Display Technology Limited (i-Display)

i-Display is a diversified technology company focusing on improving people's lives through innovation in the areas of Display Technology, Consumer Electronics and Retail Technology by providing novel display products, consumer electronics and retail technology solutions.



Shenzhen NED Optics Co., Ltd

NED Optics was established in January, 2015. It was founded by Huajun Peng, who received his PhD in flat panel display and optoelectronics in HKUST. They have profounded technology accumulation in information display and visual imaging optics, and focus on AR/VR/MR headsets.



Hangzhou ToupTek Photonics Co., Ltd

ToupTek was founded in 2010. For years, ToupTek dedicated all effort to provide the best cameras and services to our customers. By now, ToupTek has the most complete product portfolio, including USB2.0 camera, USB3.0 camera, HDMI camera and WI-FI camera.



Shenzhen Sitan Technology Co., Ltd

SiTan is a leading information display company. SiTan was founded in 2018 by Dr. Chengfeng Qiu, Dr. Xiaowei Sun, and Dr. Zhaojun Liu. The target of SiTan is to realize mass production of semiconductor displays and provide total solution for mobile displays, AR/VR, and large screens.



LiPHY Communications Limited

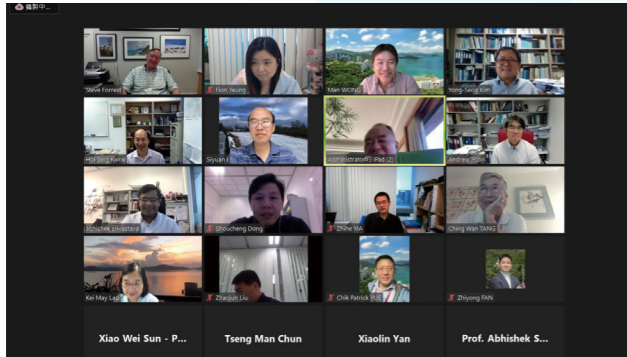
LiPHY Communications is a system solution provider for indoor positioning and interactive LED-based advertisement signage using its proprietary visible light communication (VLC) technology combined with Bluetooth Low Energy (BLE).

Industrial Collaborators

- AU Optronics Corporation (AUO)
- China Star Optoelectronics Technology (CSOT)
- Shenzhen Dalton Electronic Material Co. Ltd (Dalton)
- Truly International Holdings (Truly)
- DIC Corporation (Japan)
- BOE Varitronix (BOE)
- AV Display Co. Ltd
- Sun Display
- Infintech Co. Ltd
- RCL Semiconductors Limited (HK)
- Jenson display (China)
- Film Players Limited
- Microlite Display Technology Ltd

International Exchange

International Advisory Committee



The SKL has invited scholars of Advanced display and optoelectronics technologies from around the world to serve on the committee. Committee members participate in biannual meetings that aim to review and comment on the SKL's research progress.

Post	Name	Current Employment
Chairman	Prof. Stephen Forrest	Professor University of Michigan
Members	Prof. S Y Yu	Professor Sun Yat Sen University, Academician
	Prof. Xiaolin Yan	CTO TCL Group
	Prof. S T Wu	Pegasus Professor of Optics University of Central Florida
	Prof. Han-Ping D. Shieh	Emeritus Professor National Chiao-Tung University
	Prof. Yong-Seog Kim	Professor Hongik University, Seoul
	Prof. Xiaowei Sun	Professor Southern University of Science and Technology of China

Visiting Scholars

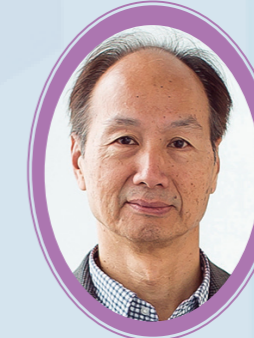
The SKL regularly invites experts on display technology to pay short visits to HKUST. These experts provide professional and effective suggestions for reinforcing our research progress.

Experts	Research Institution
Dr. Valerii Vashchenko	State Scientific Institution "Institute for Single Crystals" of National Academy of Sciences of Ukraine
Dr. Olena Vashchenko	State Scientific Institution "Institute for Single Crystals" of National Academy of Sciences of Ukraine
Dr. Mikita Marus	Southern University of Science and Technology, Shenzhen
Dr. Oleksandr Semenenko	State Scientific Institution "Institute for Single Crystals" of National Academy of Sciences of Ukraine
Ms. Prajakta Chaudhari	Centre for Modeling and Simulation, Savitribai Phule Pune University, Pune

Research Team



OLED
Prof. Ching W. Tang
Director



Optoelectronics
Prof. Hoi-Sing Kwok
Executive Director



TFT
Prof. Man Wong
Associate Director

Faculty Members

Prof. Zhiyong Fan | Prof. Abhishek Srivastava | Prof. Patrick Yue | Prof. Long Quan | Prof. Ken Tseng | Prof. Shoucheng Dong | Prof. Zhaojun Liu | Prof. Kei May Lau | Prof. Shihe Yang | Prof. Che Ting Chan | Prof. V. G. Chigrinov | Prof. Mansun Chan | Prof. Kevin Chen | Prof. Ricky Lee | Prof. Andrew Poon | Prof. Ping Sheng | Prof. Chi Ying Tsui | Prof. Kam Sing Wong | Prof. Jie Yuan

Research Staff

Mr. KM Fung | Mr. Jacob Ho | Dr. Fion Yeung | Dr. Thomas Tang | Dr. Vincent Chen | Dr. Guijun Li | Dr. Zhihe Xia | Dr. Lei Lu | Dr. Meng Zhang | Dr. Sunbin Deng | Dr. Wei Zhong | Dr. Wanlong Zhang | Dr. Jingwen YAO | Dr. Xianda Zhou | Mr. Alex Cheung | Mr. Terence Cho | Mr. Jiye Yang | Mr. Howard Chiu | Mr. Jianwen Zhong | Mr. Guannan Wang | Mr. Haojie Dong | Mr. Joe Chan | Mr. Hoi Chun Chan | Ms. Rita Ting | Ms. Venus Pang

Ph.D Students

Ms. Sisi Wang | Mr. Zhibo Sun | Mr. Dunhang Quan | Ms. Ke Zhang | Mr. Yushen Hu | Mr. Zhichao Zhou | Mr. Xuchi Liu | Mr. Runxiao Shi | Mr. Dequan Lin | Ms. Zhengnan Yuan | Mr. Chengbin Kang | Mr. Bryan Tam | Mr. Feng Feng | Mr. Guohong Xiang | Mr. Yibo Liu | Mr. Sander Yuqi Wang | Mr. Jarvis Jiang Wei | Ms. Xinying Xie | Ms. Vera Yiyang Gao | Ms. Prutha Nagaraja | Mr. Zong Liu | Mr. Mallem Kumar | Ms. Tengting Lei | Ms. Ming Cheng | Mr. Anran Li | Mr. Xinyi Yu

M.Phil Students

Mr. Chaudhry Muhammad Furqan | Mr. Pengcheng Liu | Mr. Kaiqi Chen | Ms. Yuechu Cheng



CONTACT US

Room 4008, 4/F, Cheng Yu Tung Building,
The Hong Kong University of Science and Technology,
Clear Water Bay, Kowloon, Hong Kong

Tel: +852 3469 2276
Fax: +852 2358 1485
Email: skl@ust.hk