

Department of Computing 電子計算學系

COMP @NEWS Winter 2021

Under the support of COMP and Research Centre on Data Science and Artificial Intelligence (RC-DSAI), PolyU signed a collaborative agreement with the **Centre for Artificial Intelligence and Robotics, Hong Kong Institute of Science & Innovation, Chinese Academy of Sciences (CAIR-HKISI-CAS)** on 1 November to advance Artificial Intelligence (AI), Data Science (DS) and Robotic technologies research. With a longstanding collaboration with CAS, PolyU expands and deepens its existing partnership and enters into cooperation with CAIR-HKISI-CAS.

Joining hands with CAIR-HKISI-CAS to advance AI, DS and Robotics technologies



The signing ceremony was held as a hybrid event at PolyU and the Institute of Automation, in Beijing simultaneously. It was witnessed by senior management and representatives of both parties. Prof. Christopher Chao, Vice President (Research and Innovation) of PolyU, officiated the signing ceremony and gave a speech highlighting PolyU has become the first local institution that collaborates with CAIR-HKISI-CAS.

I am confident that with the strong commitment, concerted efforts and world-renowned experts from the CAIR-HKISI-CAS, the RC-DSAI and COMP, we can strengthen our collaboration in research, provide all-around development and make significant contributions to our emerging society. PolyU established the RC-DSAI earlier in May, an intra-faculty research centre that focuses on discovering the unknown areas of AI, DS and deep learning to conduct sustainable and influential research. The Co-Directors of RC-DSAI, Prof. Li Qing,

Chair Professor and Head of COMP together with Prof. Zhang Lei, Chair Professor of COMP, introduced the Centre and its development directions. Prof. Xu Bo, Director of CAIR-HKISI-CAS delivered his opening remarks and welcomed the alliance while Prof. Zhang Zhaoxiang, Executive Director of CAIR-HKISI-CAS, also expressed his gratitude for the collaboration.

This agreement offers a framework for collaboration to develop and apply innovative technologies in the fields of AI, DS and Robotics, to generate high impact research as well as to nurture talents and benefit mankind, marking a new milestone in PolyU's development and representing our earnest efforts in fostering long-term academic and research collaborations. Through leveraging the university's competitive edge in education, research and complementing the strengths of CAIR-HKISI-CAS, the two parties will contribute to pursuing impactful research that benefits the region, the country and the world.

AWARDS & ACHIEVEMENTS

Prof. Li Qing named IEEE Fellow

Prof. Li Qing, Chair Professor of Data Science and Head of COMP, has recently been elevated to Fellow of Institute of Electrical and Electronics Engineers (IEEE) with effect from 1 January 2022, for his contributions to machine learning in multimedia, data mining and data warehousing.

Prof. Li joined COMP in 2018 as Head of the Department. His research interests are mainly in the areas of Multi-modal data management, Data warehousing and mining, Social media and Web services, and e-Learning Technologies. He has been actively involved in the research community by serving as an associate editor and reviewer for technical journals, and as an organiser/co-organiser of numerous international conferences. His significant achievement in research has also earned him the Fellowship of IET/IEE.

The IEEE is the world's leading professional association for advancing technology for humanity. Through its 400,000 plus members in 160 countries, the association is a leading authority in a wide variety of areas ranging from aerospace systems, computers and telecommunications to biomedical engineering, electric power and consumer electronics. The IEEE Grade of Fellow is conferred by the IEEE Board of Directors upon a person with an outstanding record of accomplishments in any of the IEEE fields of interest. Fellow is the highest grade of membership in IEEE, with the number selected each year not exceeding 0.1% of its total voting members. IEEE Fellow is recognised by the technical community as a prestigious honour and an important career achievement.

Congratulations to Prof. Li on this well-deserved recognition and bringing honour to the Department, the Faculty and the University for his outstanding accomplishments in advancing innovation in his fields for the benefit of society.

COMP scholars named Highly Cited Researchers 2021

We are proud to announce that Prof. Guo Song, Professor, and Prof. Zhang Lei, Chair Professor of Computer Vision and Image Analysis, have been recognised in the list of Highly Cited Researchers 2021 by Clarivate Analytics for their exceptional research and scientific impact in the field of Computer Science and Engineering respectively.



Prof. Guo conducts research mainly in the areas of Big Data, Edge AI, Mobile Computing, Machine Learning and Distributed Systems. He is an IEEE Fellow and the Editor-in-Chief of IEEE Open Journal of the Computer Society. He has also served on the editorial board of prestigious international journals. This is the second year in a row for Prof. Guo being named a Highly Cited Researcher.

Prof. Zhang is an IEEE Fellow and he has been named a Highly Cited Researcher for the seventh consecutive year. His research interests include Image and Video Processing, Computer Vision, Pattern Recognition and Biometrics, etc. and he has published more than 300 papers in these areas.



Clarivate™ Highly Cited Researchers identifies the world's most influential researchers of the past decade, demonstrated by the production of multiple highly cited papers that rank in the top 1% by citations for field and year in Web of Science™.

Faculty Awards for Outstanding Achievement 2021

Congratulations to the following staff members on receiving the Faculty Awards for Outstanding Achievement 2021. This truly reflects the great efforts and contributions made by them.



Faculty Award in Research and Scholarly Activities: **Outstanding Researcher - Outstanding Award** Prof. Cao Jiannong, Chair Professor

The winners of the Faculty Awards for Outstanding Achievement are chosen by a Faculty Assessment Panel, comprising the Heads (or their delegates) and chaired by the Dean of Faculty of Engineering (FENG), from amongst a pool of well-qualified nominees put forward by individual departments under FENG. The selection is made with reference to the indicative criteria for assessment as laid down by the University for the exercise.

CCF-Tencent Rhino-Bird Fund Scholar Reward Program

Jointly launched by Tencent and the China Computer Federation (CCF) in 2013, the CCF-Tencent Rhino-Bird Young Faculty Open Research Fund (the Fund) is committed to building a platform for industry-university research cooperation and academic exchanges for young scholars.

A scholar reward program was established to further support scientific research cooperation and personal development of scholars. Two COMP scholars recently received awards under the Fund in recognition of their academic excellence during the collaboration and projects with achievements ready for commercialisation.



COMP scales 15 positions in THE World University Rankings 2022 by Subject

In the newly released Times Higher Education (THE) World University Rankings 2022 by subjects, PolyU scales 15 positions to 64th place in the subject of "Computer Science".

The Times Higher Education World University Rankings 2022 include more than 1,600 universities across 99 countries and territories, making them the largest and most diverse university rankings to date. It is the only global university performance table to judge research-intensive universities across all of their core missions: teaching, research, citations, knowledge transfer, international outlook.

COMP ranking rises to 26th in the Best Universities for Computer Science by U.S. News

PolyU is ranked 26th in Computer Science in the recently released Best Global Universities Rankings by U.S. News & World Report's 2022.

The Best Global Universities Ranking by U.S. News & World Report covers a total of 43 subject rankings and evaluates nearly 1,750 universities across more than 90 countries using over 10 performance indicators. The performance indicators include the number of publications, the total number of citations, global and regional research reputation, and international collaboration.

Outstanding Young Researcher - Merit Award Dr Yang Lei, Assistant Professor

Faculty Award in Teaching - Outstanding Award (Team) Dr Grace Ngai, Associate Professor Dr Peter Ng, Teaching Fellow (and colleagues from BME, EE, BEEE and SLLO) Faculty Award in Teaching - Merit Award Dr Peter Ng, Teaching Fellow

> 2020 CCF-Tencent Rhino-Bird Fund -**Cooperation Award**

> > Dr Li Jing Assistant Professor

2020 CCF-Tencent Rhino-Bird Fund -**Excellence Award**

> Dr Xue Lei **Research Assistant Professor**



COMP UG student won in the New World Innovation Challenge 2021



Romeo Ng Wang-hei (BSc (Hons) in Financial Technology and Artificial Intelligence, Year 3) and his team members won the **Most Innovative** Award (Open Stream) at the New World Innovation Challenge 2021 on 27 November. The Challenge is a multi-stream open competition designed to elevate solutions provided by the next generation of promising startups, students and intrapreneurs.

Romeo's team, Team "Avant", selected 'Retail' as the problem statement. Focused on the New World Group's project, 11 SKIES, the city's largest retail, dining, and entertainment hub located next to the Hong Kong International Airport which is expected to open in 2025, the team provided solutions towards customer shopping behaviour and pattern identification by presenting a full-fledged digital strategy - a revamped digital journey and mobile app that benefits customers, 11 SKIES, and the New World Ecosystem.



An AI-powered virtual "Koncierge" offers a localised conversational experience to citizens and tourists, generating a personalised shopping journey with smart notification and an automated booking system. This is made possible by their Bluetooth-driven interest prediction model, which allows 11 SKIES to discover interests among customer segments to launch effective cross-selling strategies, increasing customer satisfaction.



HONG KONG

Finalists were also given exclusive access to mentorship from established startup founders and industry experts, as well as in-person site visits on the case studies they tackle, enabling them to gain invaluable advice. They could learn directly from the case study owners and understand how business decisions are made on the usage of technology.

> **We were inspired by the fresh ideas from other startups**, students, and intrapreneurs. It was a precious journey.

COMP PhD student shone in the Hong Kong ICT Awards 2021

Under the supervision of Prof. Guo Song, Professor of COMP, our PhD student, Jackal Xu Zhenda received the Student Innovation (Tertiarv or above) Gold Award and Student Innovation Grand Award with his project "Dr. Body-Scan" at the presentation ceremony 生創新大獎 of the Hong Kong Information and Communications Technology (ICT) Awards 2021 on 29 November.



"Dr. Body-Scan", a professional medical infrared analyzer, tailored for 3D evaluation of scoliosis issues. It innovates from traditional X-rays, by using infrared imaging technology to perform 3D reconstruction and thermal imaging of the human back. Using Al, it locates the medical anatomical feature points of the human back automatically, while using the musculoskeletal model to process the 3D structures of big bones, such as backbones, for calculation, leading to a safe and reliable detection, close follow-up, long term analysis for non-surgical cases and assistance for ICT AWARDS

rehabilitation projects of scoliosis and other bad postures. The Hong Kong ICT Awards (the Awards) is an annual signature event in the local ICT industry, aiming to promote outstanding ICT inventions and applications. In addition to encouraging the winners and recognising their achievements, the Awards also help their products enter into the international

markets.

¹¹ Thank you COMP and Prof. Guo for the support. I hope 'Dr. Body-Scan' can first serve primary and secondary school students in Hong Kong from 2022, especially to help children and teenagers who may have abnormal spinal curvature.



Python workshops for MSc students

Programming workshops are the learning initiatives designed to strengthen our students with basic programming knowledge to master their studies at COMP.

With the growing popularity of Python, we organised a series of online workshops from September to October 2021 which attracted over a hundred MSc students with diverse programming backgrounds but new to Python.



Students learnt how to install and use Python, its features, methods and the comparison with other programming languages. Students also had the opportunity to practise various coding Scientific Computing and Plotting exercises with real examples in which they could gain a better understanding and hands-on experience.



'Virtual Laboratories: Addressing Teaching & Learning Challenges in Cybersecurity Education"

Dr Dennis Liu **Feaching Fellow** COMP

deployment and allows a safer environment for cybersecurity-related operations. The teaching team

"Providing Personalized Feedback and Promoting Active Learning Experience with AI Chatbot on



AI can help to provide personalised feedback to students to

the traditional setting. Using AI chatbot as an intelligent tutor

17 December 2021



from students; to have peer learning. Dr Ng proposed to enhance a spatial video conference platform and integrate it with Zoom and Teams. Spatial video conference platform connects people virtually in a more move in and out of conversations and experience moments of serendipity. It also provides students with a





COMP Teaching Seminars/ T&L Sharing

7 December 2021 Moodle-based Learning Platform"



Dr Winnie Lam Associate Head & Senior Lecturer Department of Mathematics and Information Technology EdUHK

RESEARCH **EXCELLENCE**



Project Launch Seminar -Hong Kong Stock Market: Review and Outlook

COMP received an ITF grant under the Partnership Research Programme for a Fintech-related project entitled: "An Innovative Hybrid Intelligence Web System for the Hong Kong Stock Market". In collaboration with the Hong Kong Institute of Financial Analysts (HKIFA) and Institute of Financial Technologists of Asia (IFTA), this innovative project seeks to combine human intelligence and artificial intelligence (i.e. Hybrid Intelligence) for analysing the Hong Kong stock market and to contribute to Hong Kong's Fintech development.

Supported by the industry partners, a project launch seminar "Hong Kong Stock Market: Review and Outlook" was organised at PolyU on 20 December 2021. The seminar was attended by over a hundred practitioners and representatives from the industry as well as students and alumni. Dr Miranda Lou, Executive Vice President of PolyU and Prof. Christopher Chao, Vice President (Research and Innovation) of PolyU greeted the audiences and delivered the welcome addresses respectively. Mr Joseph Chan, JP, Under Secretary for Financial Services and the Treasury, The Government of the HKSAR, and Dr David Chung, JP, Under Secretary for Innovation and Technology, The Government of the HKSAR were also invited to be the distinguished guests.

Having Dr Henry Chan, Associate Professor and Associate Head (Partnership & Collaboration) of COMP as the moderator, Dr Kenny Tang, Chairman of HKIFA and Mr Paul Pong, Chairman of IFTA gave a presentation on the "Hong Kong Stock Market" in which they exchanged views about the market in 2021 from different perspectives. They also expressed their opinions and shared their insights such as forecasting the attractive sectors in 2022.

Aiming for knowledge transfer and entrepreneurship, Dr Henry Chan (also the Project Coordinator) further gave an overview and talked about the objectives of the collaborative research and development project at the end of the seminar.



Research Seminars

To keep our academic staff members and students up-to-date with the cutting-edge technical knowledge in computing-related disciplines, as well as assist them in gaining exposure to a broad range of research topics, COMP regularly invites scholars of different specialisations to share with us their latest research findings.

Date	Seminar Topic	Speaker	Institution
26 November 2021	Imbalanced Data Learning: Always Needed?	Prof. Cheung Yiu-ming	Department of Computer Science Hong Kong Baptist University Hong Kong
13 December 2021	Towards Next-Generation Auditory Information Processing: A Neuromorphic Approach	Dr Wu Jibin	Research Scientist Sea Al Lab (SAIL) Sinagpore
15 December 2021	Theoretical Analysis of Hyperbolic-space- based Machine Learning Models	Dr Atsushi Suzuki	School of Computing and Mathematical Sciences University of Greenwich UK

Distinguished Seminar Series on Data Science & Artificial Intelligence

Co-organised with the PolyU Research Centre on Data Science and Artificial Intelligence (RC-DSAI), we have launched a Distinguished Seminar Series on Data Science and Artificial Intelligence since March 2021. Worldrenowned scholars were invited to share the latest technological development of data science and artificial intelligence with us.



Prof. Philip Yu

UIC Distinguished Professor Wexler Chair in Information Technol Department of Computer Science University of Illinois at Chicago USA



Prof. Jeffrey Yu Professor

Department of Systems Engineering Engineering Management The Chinese University of Hong Kong Hong Kong

Prof. Zhou Xiaofang

Otto Poon Professor of Engineering Department of Computer Science an The Hong Kong University of Science Hong Kong



Prof. Tao Dacheng

Inaugural Director of JD Explore Aca Senior Vice President of JD.com, Chi Advisor and Chief Scientist Digital Science Institute The University of Sydney Australia



Dr Zheng Yefeng Director Tencent Jarvis Lab China



Prof. Yao Xin Chair Professor Research Institute of Trustworthy Autonomous Systems Department of Computer Science and Engineering Southern University of Science and Technology China Professor School of Computer Science University of Birmingham UK

ogy	11 October 2021 "On Recommendations via Deep and Broad Learning"
g and g	26 October 2021 "Large Graph Processing"
and Chair Professor nd Engineering e and Technology	24 November 2021 "The Three Pillars of Data Science"
ademy ina	6 December 2021 "Super Deep Learning for Computer Vision"
	10 December 2021 "Medical Artificial Intelligence: A Brief Introduction of Tencent Jarvis Lab"
itan amang Cuptores	

15 December 2021

"Multi-objective Ensemble Learning and Its Applications"

EVENT HIGHLIGHTS



COMP @ PolyU Undergraduate Info Day 2021

PolyU Education Info Day was successfully concluded on 10 October 2021. The Info Day was conducted in hybrid mode in which COMP organised various activities such as info seminars with live consultation and a virtual booth exhibition.

Dr Leong Hong-va, our Associate Professor and Associate Head (Teaching & Learning) hosted the info seminar of the BSc (Hons) Scheme in Computing & AI with comprehensive information including the programmes on offer, admission requirements, learning opportunities and career prospects. During the Q&A session, Dr Leong offered his professional advice on studying at COMP to the attendees both online and physically. There was lively interaction among them.

We have prepared a video covering the introduction of our teaching facilities, students' sharing of learning experiences and career options illustrated by our alumni in the virtual booth exhibition. Posters on the development of the FinTech & AI profession, COMP graduate employment figures and alumni testimonials, were also showcased to further enable participants to understand more about COMP.



The BSc (Hons) Scheme in Computing & Al that we offer includes three major degree programmes - BSc (Hons) in Computer Science, BSc (Hons) in Enterprise Information Systems, and BSc (Hons) in Financial Technology and Artificial Intelligence. These programmes are designed with diversified scopes of curriculum, allowing students to select the most suitable one for themselves in the second year of study after a unique common first year.

The annual PolyU Undergraduate Info Day provides an excellent platform for prospective students, their parents and the public to obtain first-hand information on a wide range of academic programmes and to gain useful tips about planning for university life.

Lab Visits

Date	Labs involved	Visitors
14 November 2021	AR/ VR Lab	A delegation from Hong Kong Customs College under Customs & Excise Department
19 November 2021	- Artificial Intelligence and Robotics (AIR) Research Group - AR/ VR Lab - FinTech and Cyber Security Lab	A delegation from Information Systems Wing of Hong Kong Police Force



Alliance with TCL to foster research collaboration

PolyU announced the signing of a Memorandum of Understanding (MoU) with TCL Group, a multinational electronics company headquartered in Mainland China at the TCL Global Technology Project Release and Cooperation Signing Conference in November 2021. The cooperation was driven by COMP and the Research Centre on Data Science and Artificial Intelligence (RC-DSAI) of PolyU. The MoU offers a framework for collaboration to develop research in science and technology, as well as for developing and implementing applied research projects in innovative Artificial Intelligence.

The MoU was signed by Prof. Christopher Chao, Vice President (Research and Innovation) of PolyU and Dr Shen Jiajun, Chief Al Scientist of TCL Corporate Research (Hong Kong) Co. Limited. The signing ceremony was witnessed by the Co-Directors of RC-DSAI, Prof. Li Qing, Chair Professor and Head of COMP and Prof. Zhang Lei, Chair Professor of COMP as well as Mr Hei Chak, Design Director and Mr Karl Li Manager of External Affairs from TCL Corporate Research.

At the ceremony, Prof. Chao said, "This MoU marks a closer tie between the two parties, represents our efforts to promote long-term academic and research cooperation, and also perfectly reflects our commitment to meet the changing needs of students and society." On behalf of TCL Group, Dr Shen expressed his enthusiasm for collaboration and said the main purpose of the MoU was to facilitate further discussions and explore collaborative opportunities on AI, Data Science and robotics technologies. Through this alliance, both parties aim to promote the long-term development of AI, identify new applications, explore more innovative technologies, attract R&D experts and cultivate AI talents.

MoU Signing Ceremony between PolyU and Chiang Mai University (CMU)



The signing ceremony was witnessed by Prof. Li Qing, Chair Professor and







The 27th Congregation of PolyU

The graduation ceremonies of COMP bachelor and master degrees students have been successfully concluded on 29 November at the Jockey Club Auditorium of PolyU. Families and friends of graduates gathered together to witness such a memorable moment.















ALUMNI CORNER



COMP x CAA Academic-Industry Seminar (Oct 2021)

To encourage lifelong learning and strengthen the connection between COMP and Alumni, as well as to foster possible collaboration between academia and industry, COMP and the Computing Alumni Association (CAA) are co-organising the "COMP x CAA Academic-Industry Seminar Series" in the academic year of 2021/22. Various academics and industry professionals will be invited to share their insights and experiences on important computing topics. The first seminar was held successfully at PolyU on 27 October with the topic of "Artificial Intelligence".



artificial intelligence can be used in big data analytics to improve problemsolving efficiency for better decision making and optimization in industrial applications.

Mr Jeffrey Ng, Vice President of CAA and Project Leader of MBB Strategy Firm, shared his hands-on experience in artificial intelligence for banking and finance with the audiences.



Dr Henry Chan, Associate Professor and Associate Head (Partnership & Collaboration) of COMP hosted an interactive Q&A session near the end of the seminar. Winners from the Q&A session were able to get a prize - the new book named "Hands-On Artificial Intelligence for Banking" donated and written by Mr Jeffrey Ng.

Computing Alumni Association (CAA) Logo Design Contest

Are you a creative designer? Do you want to have a voice in our CAA logo? It's time now!

In celebration of PolyU 85th anniversary, CAA sincerely invites you to provide a creative design for CAA new logo. Ms Belinda Chow, Director of PolyU Alumni Affairs and Development Office and Mr Samuel Yau, President of the PolyU Design Alumni Association were invited to join as the judging panels. The champion of this competition will receive a cash prize of HK\$ 5,000. For details, please visit https://polyu.hk/bVpss.



Dr Miranda Lou, Executive Vice President of PolyU, was invited to officiate the seminar. Prof. Li Qing, Chair Professor and Head of COMP delivered a welcome remark, followed by Mr Darron Sun, President of CAA and Head of Information Technology of Hong Kong Housing Society also gave a warm welcome.

Themed on "Applied Artificial Intelligence in Engineering", Prof. Tan Kay Chen, our Chair Professor and Associate Head (Research

& Development) was invited as the first speaker to discuss how



Submission Deadline: **31 January 2022** Enquiry: Hon. Secretary - secretary.caa@gmail.com

DEPARTMENT **UPDATES**

New Academic Staff



Dr Jiang Shan as Research Assistant Professor







Dr Yang Yu as Research Assistant Professor

New Visiting Associate Professor



Prof. Li Pan Associate Professor Department of Electrical, Computer, and Systems Engineering Case School of Engineering Case Western Reserve University USA

Retreat for Teaching and Research

On 30 November 2021, COMP hosted two retreats, one for teaching and learning, and another for research.

The teaching retreat was for the programme leaders and subject group leaders to discuss the challenges and the way forward in programme management and group operation as well as review the group subjects and workflow of teaching assignment.





The research retreat was for the research group leaders to brainstorm ideas on promising research topics and impact projects, and discuss the concrete plans and actions for implementation to generate impact from the projects for better preparation for the next RAE as well as build a name for COMP.

COMP Retreat

To strengthen the internal bonds of COMP, a departmental retreat was organised at Hotel ICON on 22 - 23 December with the participation of around 70 staff members. A series of discussions and sharing sessions on good practice on teaching and research was held in which our staff members fully engaged in brainstorming and idea exchanging. The two-day retreat enabled COMP colleagues to set daily operations aside and immerse themselves in a relaxed environment that fostered motivation and collaboration.





Master of Science in Information Technology (MScIT) (2022/23 entry) is accepting applications!







2 (852) 3400 3145 comp.enquiry@polyu.edu.hk www.polyu.edu.hk/comp

Our MSc programme is a popular programme offering taught postgraduate computing education in Hong Kong, which is designed to nurture IT professionals and leaders for the long-term benefits of Hong Kong. The programme focuses on three important areas of information technology: Artificial Intelligence (AI), Big Data and Financial Technology (FinTech), which are in great demand by Hong Kong business, industry, government and society.

Application Deadline: 30 April 2022



Application & Programme Info





Department of Computing

The Hong Kong Polytechnic University Hung Hom, Kowloon, Hong Kong