THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

Annual Report
**on Activities and Advancement
of Knowledge Transfer** 2024-25

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EXECUTIVE SUMMARY

The Hong Kong Polytechnic University (PolyU) achieved significant milestones in knowledge transfer (KT) and entrepreneurship during the 2024/25 fiscal year. Ranked 54th in the QS World University Rankings 2026, PolyU continues to translate its research excellence into impactful innovations, both locally and internationally. Through multidisciplinary collaborations, particularly in artificial intelligence (AI), medical engineering, and sustainability, our researchers are driving real-world applications and advancing society.

This report highlights PolyU's solutions to real-world challenges through impactful innovations. Notably, we have pioneered research in AI-integrated medical technologies, developing cutting-edge solutions for liver fibrosis assessment and advanced generative AI technologies for ophthalmology. The University has also developed innovative smart textile materials and devices for reliable physiological monitoring and therapeutic benefits. Our commitment to public safety is demonstrated by the development of advanced intelligent building fire protection systems and AI-driven fire forecasting tools. Furthermore, PolyU has developed high-performance steel, energy-saving cooling coatings, and structural health monitoring technologies, contributing to the safety, sustainability, and longevity of civil structures.

In 2024/25, PolyU's dedication to translating research into practical solutions resulted in a 37% year-on-year increase in patent filings, a 152% increase in Trial/Express licensing, and 249 licenses granted—a 24% increase over the previous year. These remarkable results have greatly facilitated the transfer of valuable patents from campus to industry, creating significant societal impact.

Guided by our strategic goal of propelling innovation and impact through sustainable partnerships with the wider community, PolyU leverages its unique strengths to foster interdisciplinary synergies. We have developed extensive collaborations across Mainland China and internationally, particularly in medical-engineering, to support cost-effective talent development in this critical field. These collaborations include strategic partnerships with Stanford Medicine, Peking University Third Hospital, the National University Regional Center for Technology Transfer in Biomedicine, and Suzhou Kowloon Hospital, significantly enhancing PolyU's research capabilities and international reach.
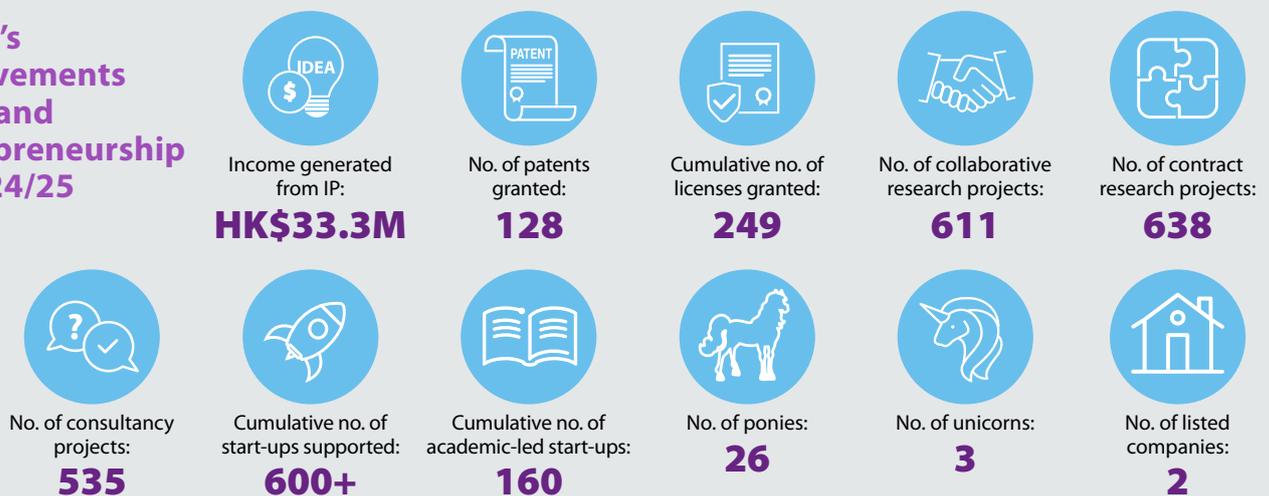
In parallel, PolyU has forged strong ties with major industry players such as Huawei Cloud, China Railway, and China Tower, driving university–industry integration and amplifying our global research impact.

Currently, we operate 44 university-level research centres, 12 Mainland Translational Research Institutes/Centres (MTRI/MTRC), and eight national research laboratories. We remain committed to expanding our MTRI network in Mainland China to further commercialise research outcomes, support local industries, and contribute to regional development.

PolyU's entrepreneurial ecosystem continues to deliver impressive results. Two PolyU-nurtured start-ups were recently featured on Forbes' prestigious '30 Under 30 Asia 2025' list. To date, our ecosystem has nurtured two listed companies, three unicorns, 26 ponies, and more than 600 start-ups, over 160 of which were founded by faculty members.

In 2024/25, the Micro Fund Scheme attracted 110 start-ups, with 80% gaining admission to Hong Kong Science and Technology Park (HKSTP). The Translational Start-up Postdoc Programme

PolyU's achievements in KT and entrepreneurship in 2024/25

Income generated from IP:	No. of patents granted:	Cumulative no. of licenses granted:	No. of collaborative research projects:	No. of contract research projects:
HK$33.3M	128	249	611	638

No. of consultancy projects:	Cumulative no. of start-ups supported:	Cumulative no. of academic-led start-ups:	No. of ponies:	No. of unicorns:	No. of listed companies:
535	600+	160	26	3	2

has supported 24 postdoctoral fellows, over 95% of whom have been admitted to HKSTP and have collectively secured more than HK$27 million in follow-on funding. In the latest cohort, we admitted a further 21 postdocs, who will be incubated at our MTRIs, leveraging support and resources from local mainland cities.

The PolyU Entrepreneurship Investment Fund (EIF) has invested in 19 start-ups in 2024/25, accelerating their growth through top-up and direct co-investment. Furthermore, the Hong Kong Government's RAISe+ Scheme awarded six PolyU projects in its first two rounds, with funding support from the Government, investors, and PolyU. These achievements highlight our dedication to fostering innovation, nurturing entrepreneurial talents, and driving impactful ventures that benefit society.

PolyU achieved outstanding success this year at prestigious international innovation and invention events, earning 67 awards across Asia, Europe, and North America. These accomplishments demonstrate the University's global leadership in innovation and technology, as well as its ongoing commitment to excellence and significant impact on the international stage.

Advancing Knowledge Transfer to Expand Societal Impact

Impactful Innovation Addressing Real-World Challenges

This section showcases PolyU's outstanding achievements in advancing KT and tackling real-world challenges through impactful innovations. Our breakthroughs span diverse fields, including medical technologies, smart textile materials, fire protection systems, and the development of emerging materials and structural systems for sustainable infrastructure. A selection of representative impact cases is presented below.

Liverscan®: Palm-sized Image-guided Transient Ultrasound Elastography for Liver Fibrosis Assessment

Chronic liver disease affects over 844 million people worldwide and can progress to life-threatening conditions if not properly monitored. Traditional diagnostic methods, such as liver biopsy, are invasive, while many non-invasive alternatives lack accuracy or portability.

PolyU start-up offers free liver disease screening for grassroots

To address these challenges, Prof. ZHENG Yongping of PolyU's Department of Biomedical Engineering has developed Liverscan®. This palm-sized, wireless device integrates real-time imaging with transient elastography, a technique that uses shear wave propagation to measure the stiffness of the liver—an indicator of fibrosis or scarring. By leveraging ultrasound miniaturisation and AI-based image processing, Liverscan® delivers fast, accurate, and portable liver assessments, making early diagnosis more accessible and efficient. Its accuracy matches that of established devices, with the added benefits of convenience and suitability for point-of-care use.

To commercialise this breakthrough technology, Prof. ZHENG founded Eieling Technology Limited, which has attracted significant investment, created jobs, and secured regulatory approvals in both the USA and China. Liverscan® is now widely used in hospitals across Mainland China, Hong Kong, Macao, and internationally. In 2024 alone, it screened over 20,000 individuals, enabling early detection and timely intervention for severe liver conditions.

Generative AI Enabled Precision Diagnosis

Prof. HE Mingguang and his team have pioneered advanced generative AI technologies for ophthalmology. Their breakthroughs include generating realistic eye scans from different imaging types (cross-modal image generation) and creating detailed 'vascular fingerprints' of the eye's blood vessels.

Their system uses generative AI to create detailed images and even moving videos of the eye's blood vessels from a single standard, standard colour photograph of the back of the eye. By replicating the results of traditional angiography without invasive dye injections, this innovation significantly improves the safety, speed, and accessibility of screening for retinal disease.

The system enhances diagnostic accuracy for conditions such as diabetic retinopathy, diabetic macular oedema, and age-related macular degeneration by integrating these AI-generated images with actual eye photos.
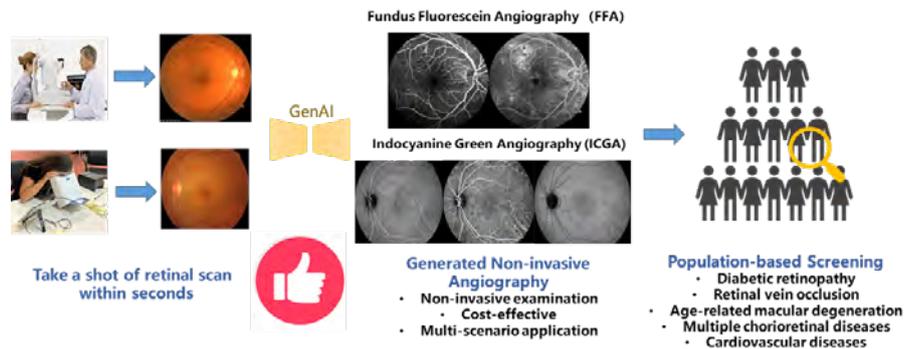
Additionally, the team has developed 'fingerprints' of the blood vessels in the retina and choroid. These 'fingerprints' precisely measure hundreds of characteristics of these vessels using various scanning methods. The detailed vessel patterns serve as biomarkers for both eye-related and systemic conditions, including stroke, coronary heart disease, and those associated with ageing. This enables comprehensive, non-invasive screening and personalised treatment strategies.

These technologies have been deployed in clinical centres in Hong Kong and adopted by clinical research image analysis in Denmark, offering critical insights into disease mechanisms and improving disease management. Collectively, these innovations represent a major advancement in eye care, providing safer, more efficient, and more precise diagnostic tools that benefit both patients and the broader healthcare system.

Advanced Smart Textiles for Health and Wellbeing

For over 20 years, PolyU's School of Fashion and Textiles has led advancements in smart fibre technology, significantly impacting wearable health and sports applications.

A team led by Prof. TAO Xiaoming has developed innovative soft sensors, such as polymeric optic fibre grating and conductive knitted-fabric strain sensors, enabling precise biomechanical monitoring through advanced analysis and clinical validation. Their breakthroughs include fluidic fabrics with record-fast temperature switching and high thermal transfer efficiency, crucial for wearable devices with limited battery power, and green antibacterial and antiviral materials.

Another breakthrough, developed by a team led by Prof. LI Li, is engineered functional fibres with enhanced infrared emission without chemical additives.

These technologies have been translated into practical products, including smart footwear for diabetes and Parkinson's patients and a rapid temperature therapy system used by elite athletes.

The research has led to the creation of three start-ups:

- Guangzhou Zhikang Technical Co.: Specialising in smart yoga pants and breathing belts.
- Ningbo Aide Technology Co., Ltd.: Developing intelligent ECG clothing.
- Supersense Technical Co. Ltd.: Creating EEG and gait-monitoring footwear.

Collectively, these advanced technologies have generated over 165 jobs, and benefitted more than 106,300 users as of June 2025. This work demonstrates the transformative societal impact of smart fibre technology in healthcare, rehabilitation, and sports, improving quality of life and driving economic growth.

Smart Fire Safety and Firefighting in Era of Artificial Intelligence

Fire remains a persistent threat to communities. To address these risks, the Department of Building Environment and Energy Engineering has pioneered the use of AI and the Internet of Things (IoT) in smart firefighting technologies. These technologies, developed in collaboration with the Fire Services Department and property management companies, have significantly improved emergency response and have been widely adopted by many different types of organisations.

The research has also enhanced fire safety in sustainable energy systems, such as solar panels and battery storage, ensuring the resilience of modern green buildings. In addition, work on smouldering fires helps reduce global wildfire risks, while the innovative air-vortex fire suppression technology, which uses a spinning column of air to extinguish flames, can be applied to Space Station and future lunar and Martian habitats.
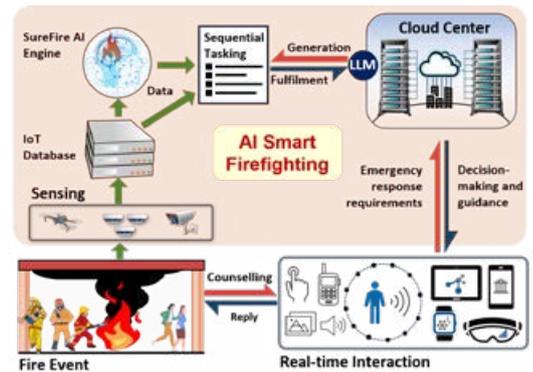
These achievements have led to the creation of national fire safety standards and resulted in over 20 patents. The smart firefighting technology has also won the Gold Medal with Jury Congratulations at 2025 Geneva International Exhibition of Inventions and Best of Innovation Award at 2026 Consumer Electronics Show (CES). Collectively, these advancements greatly enhance public safety, support sustainable development, and extend fire protection to new frontiers, demonstrating a far-reaching social impact.

Emerging Materials and Structural Systems for Sustainable Infrastructure

TThe Department of Civil and Environmental Engineering (CEE) has emerged as a leader in developing sustainable materials and advanced technologies to enhance infrastructure resilience. CEE's pioneering work covers three key areas: innovative structural materials, high-performance steel, and cutting-edge monitoring technologies.

The research on fibre-reinforced polymer (FRP) composites—lightweight, strong materials made from fibres embedded in a plastic matrix—has shaped international building design codes worldwide and enabled the construction of more durable and efficient bridges worldwide. Notably, the innovation combining FRP with concrete and steel addresses both the durability and seismic performance of structures.

The Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch), which operates under CEE, has significantly advanced the use of high-strength S690 steel. The Centre has developed methods to minimise the loss of strength in such steel when it is welded, supporting its use in major projects such as the Cross Bay Link double-arch steel bridge.
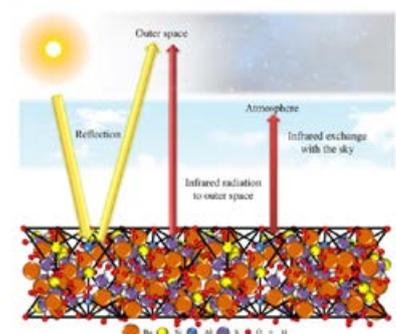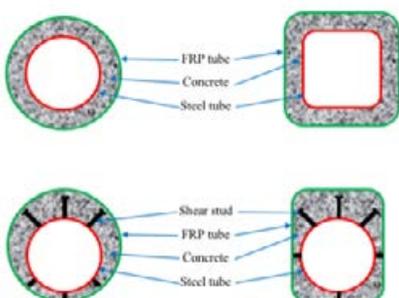
CEE's structural health monitoring and maintenance (SHMM) technologies, which use edge computing and deep learning, are setting global standards for monitoring large-scale structures such as the Hong Kong–Zhuhai–Macao Bridge. These innovations significantly enhance safety and durability, earning international recognition. Ultimately, CEE's innovations contribute to safer, more sustainable infrastructure, benefitting society by ensuring that critical civil structures last longer and remain resilient.

Strengthening PolyU's Future Research Impact with Substantial Funding Support

With the support of several major research grants in 2024/25, PolyU continues to conduct impactful research that aligns with the needs of Hong Kong, the nation, and the world.

PolyU Secures Funding from GRF and ECS for Academic and Research Excellence

The University received a total of HK$207.8 million from the General Research Fund (GRF) and the Early Career Scheme (ECS), positioning it among the top three universities in terms of total grant amounts. Of this, 203 PolyU projects were granted HK$185.7 million from the GRF, while another 34 projects received HK$22.1 million from the ECS. Notably, PolyU's engineering discipline distinguished itself by securing the largest amount of funding from both schemes among all universities, underscoring its leading research capabilities.

PolyU Leads UGC-funded Universities for CRF and RIF in 2024/25

PolyU demonstrated exceptional performance in securing competitive grants, with 18 PolyU projects receiving approximately HK$91.76 million from the Collaborative Research Fund (CRF) and the Research Impact Fund (RIF), both administered by the Research Grants Council (RGC). PolyU outperformed its peers in both the number of funded projects and the total CRF funding received. These achievements highlight PolyU's commitment to advancing impactful research through robust interdisciplinary collaborations and pioneering innovative solutions that enhance lives across the world.

PolyU Secures NSFC / RGC Grants to Deepen National Collaboration in Science

PolyU secured eight projects through the National Natural Science Foundation of China (NSFC) / RGC Joint Research Scheme, totalling HK$8.47 million, and one project through the NSFC / RGC Collaborative Research Scheme, amounting to HK$3.55 million. These projects focus on critical areas such as new materials science, marine science, and environmental science. By supporting deeper integration into national development, these projects will further strengthen research collaboration with our Mainland partners, leveraging the complementary strengths of both sides for greater impact.

29 PolyU Projects Awarded Funding from the Health and Medical Research Fund

PolyU was awarded HK$27.28 million for 29 projects spanning various research areas related to health technology and biomedical engineering. This success highlights our interdisciplinary expertise in medical and healthcare research, as well as our ability to address the rapidly evolving demands of the healthcare sector.

Two PolyU Projects Receive RGC Theme-based Research Scheme 2024/25 Funding

PolyU received HK$87.42 million in funding from the RGC's Theme-based Research Scheme 2024/25 for two significant projects. These projects focus on developing multi-sensory wearable devices and social robots for personalised mental healthcare, thereby supporting interdisciplinary research and Hong Kong's sustainable development goals.

Eight PolyU Projects Supported by Smart Traffic Fund to Enhance Driving Safety and Traffic Efficiency

PolyU secured funding for eight projects in the 15th to 20th batches of the Smart Traffic Fund, receiving a total of approximately HK$32.5 million. Since 2020/21, 26 projects have been funded by this scheme, accumulating a total of HK$105.2 million, which represents the highest amount of funding among UGC-funded universities. This substantial support empowers us to further enhance quality of life and shape the future by advancing intelligent transportation systems and smart mobility solutions.

PolyU's Drive to Develop the Circular Economy Awarded RGC Funding

PolyU's School of Fashion and Textiles was awarded approximately HK$8 million by the Research Grants Council Senior Research Fellow Scheme to advance the development of the circular economy. This project aims to foster global sustainable production and consumption by providing managerial and policy insights, and encouraging corporate compliance with governance rules related to product design, manufacturing, and end-of-life treatment. Ultimately, this promotes environmental responsibility, waste reduction, and the avoidance of using virgin resources.

PolyU Receives Two Important Funding Awards for Environmental Sustainability

Ten projects led by PolyU scholars have received approximately HK$7.43 million from the Environment and Conservation Fund. This funding will support efforts to address pressing environmental challenges and promote environmental protection and conservation through cutting-edge technologies and innovative research. We have also received around HK$6.03 million from the Green Tech Fund to advance the development of low-carbon, marine self-healing concrete, thereby supporting long-term decarbonisation and sustainability goals.

PolyU Becomes Hong Kong's First Tertiary Institution to Receive China National Arts Fund 2025 Award

PolyU has become the first tertiary institution in Hong Kong to receive funding from the prestigious China National Arts Fund 2025. The funded programme, which falls within the category of art talent training, was launched by the School of Design with support from the PolyU–NVIDIA Joint Research Centre. This project aims to nurture talent in digital art curation across the Greater Bay Area (GBA) and strengthen Hong Kong's position as an East-meets-West centre for international cultural exchange.

PolyU Achieves Impressive Results in the National Science Fund for Young Scholars

This year, PolyU achieved impressive results in both the National Science Fund for Distinguished Young Scholars (國家傑出青年科學基金) and the Excellent Young Scientists Fund (優秀青年科學基金). We secured two awardees for the former and four awardees for the latter, amassing total funding of RMB 14.8 million. This success highlights our research and innovation excellence among young researchers and strengthens our competitive standing at the national level.

Driving Interdisciplinary Innovation: Impact on Healthcare Technologies and AI

The PolyU Academy for Interdisciplinary Research (PAIR), comprising 19 research institutes and centres, serves as a central research platform at PolyU. PAIR is dedicated to delivering world-class interdisciplinary solutions to major societal challenges and fostering a more sustainable future.

In 2024/25, PAIR pioneered AI-driven healthcare technologies to enhance diagnostic accuracy, patient care, and medical knowledge sharing. Key innovations included:

- 3D ultrasound imaging for assessing muscle loss and stroke risks in older adults.
- An AI-powered health assessment framework to promote elderly independence.
- Portable AI-based ultrasound tools for evaluating swallowing difficulties.
- A contrast-free virtual enhancement MRI system, which improves the precision of tumour treatment.
- An AI-powered portable retinal fundus camera enabling self-screening for diabetic eye conditions.
- The world's first portable corneal topographer, 'K-Shape', providing rapid vision diagnostics.

These technologies collectively aim to improve healthcare accessibility and efficiency.

PolyU is committed to advancing AI education and research. In 2024/25, we established the Faculty of Computer and Mathematical Sciences, and the PolyU Academy for Artificial Intelligence. The vision of these two new bodies is to lead global advancements in digital transformation and AI through distinguished education, research, and knowledge transfer. This initiative also aims to elevate Hong Kong as a global hub for generative AI development through open collaboration and democratising advanced AI capabilities to drive worldwide innovation.

Two strategic AI research projects at PolyU successfully secured HK$92.9 million in subsidies through Cyberport's new Artificial Intelligence Subsidy Scheme (AISS). By leveraging the computing power of Cyberport's AI Supercomputing Centre (AISC), we are driving AI innovation and strengthening our key role in Hong Kong's AI development field.

In March 2025, PAIR hosted its inaugural Public Forum for Research and Innovation, titled 'DeepSeek and Beyond'. Prof. YANG Hongxia, Associate Dean (Global Engagement) of the PolyU Faculty of Computer and Mathematical Sciences, and Professor of the Department of Computing, delivered the keynote speech. The forum highlighted the latest developments in AI and attracted over a thousand participants, including faculty and other academic staff, students, alumni, leaders from the innovation and technology sector, and members of the public. In addition to those attending in person, over 390,000 others tuned in via the forum's live streaming platforms.

Meanwhile, at the opening ceremony of the PolyU Marshall Research Centre for Medical Microbial Biotechnology and the accompanying 'AI & Medicine: Shaping the Future of Health' forum, Nobel Laureate Prof. Barry MARSHALL highlighted AI's transformative impact on healthcare. He noted its ability to revolutionise disease diagnosis, personalise treatments, and predict patient outcomes with remarkable accuracy. Prof. MARSHALL emphasised that AI's capacity to analyse vast data sets uncovers new medical insights, enhancing patient care and research. He expressed confidence that the new Research Centre will drive innovation and collaboration in this evolving field.

Strategic Partnerships with Industry for Joint Research and Applications

PolyU continues to strengthen its global research impact through strategic partnerships with leading institutions and industries. With a strong interdisciplinary focus, we operate 44 university-level research centres, 12 Mainland Translational Research Institutes/Centres (MTRI/MTRC), and eight national research laboratories. These drive innovation across areas including healthcare, AI, smart cities, and sustainability. Supported by experienced healthcare faculty and advanced facilities, PolyU has strongly emphasised fostering collaboration between medicine and engineering. Below, we present highlights of strategic partnerships formed during the reporting period.

Advancing Medical–Engineering Integration Through Strategic Global and National Partnerships

To support national strategies for collaborative innovation between the fields of medicine and engineering, PolyU has established the

Medicine–Engineering Collaborative Innovation Research Laboratory with Peking University Third Hospital. We have also signed an MoU with Peking University Health Science Center. Both initiatives aim to advance joint research in medical technology.

We have further partnered with Suzhou Kowloon Hospital to create a biomedical technology innovation and incubation platform, using clinical resources to translate research into practical applications and develop start-ups. Additionally, PolyU became one of the first Hong Kong institutions to join the National University Regional Center for Technology Transfer in Biomedicine (Suzhou, Jiangsu), significantly boosting efforts to commercialise innovations in the biomedical sector.

Internationally, PolyU signed an MoU with Stanford Medicine to establish the PolyU–Stanford Joint Collaboratory for Longitudinal Deep Omics. This collaboration combines expertise in biomedical engineering, AI, and multi-omics, the combined study of different biological data, such as genes, proteins, and cell activity, to advance precision medicine and research on ageing.
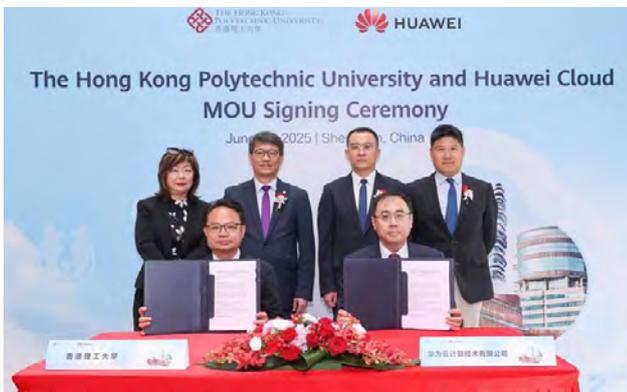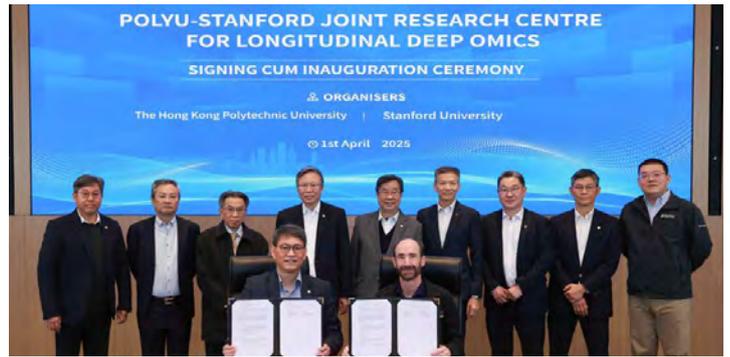
PolyU and Huawei Cloud Forge Strategic Alliance for Global Innovation

PolyU signed a strategic cooperation MoU with Huawei Cloud to deepen collaboration between academia and industry, and accelerate the worldwide use of research findings. This collaboration focuses on three core areas: (i) research and commercialisation; (ii) overseas incubation and joint building of start-up networks; and (iii) cultivating research talent. Each of these areas signifies a critical step forward for the two parties to facilitate joint research and bring research achievements to a global audience.

PolyU and China Railway Ally for Global Rail Tech Leadership

The University and China Railway Electrification Engineering Group have signed a strategic agreement to establish a joint laboratory for advancing railway technologies. Leveraging Beijing-Hong Kong collaboration, the partnership aims to nurture top talent, foster industry-academia integration, and develop the lab into a global innovation hub, supporting China's "Transportation Powerhouse" strategy and the development of world-class digital economy cities.

PolyU and China Tower Collaborate to Advance Low-Altitude Economy

PolyU and China Tower Corporation Limited have signed a strategic cooperation agreement to advance key research areas such as the low-altitude economy and next-generation network technologies. Through this partnership, both parties will collaborate in-depth to drive technological innovation and help translate research outcomes into practical applications.

Expanding Impact Across Mainland China

At PolyU, we are expanding our research and commercialisation impact across Mainland China, driven by our strategy of growing our network of Mainland Translational Research Institutes/Centres (MTRI/MTRC) and fostering cross-border innovation.

Expanding MTRI/MTRC Network to Drive Innovation

PolyU is actively expanding its network of MTRIs and MTRCs across Mainland China. These serve as strategic initiatives for translating research outcomes and into practical commercial applications that serve local industries and contribute to regional development. To date, we have established MTRIs in 11 major cities: Hangzhou, Hefei, Huizhou, Jinjiang, Nanjing, Shaoxing, Wenzhou, Wuhan, Wuxi, Xingguo and Zhongshan. We have also established one MTRC in Qianhai.

With support from the Qianhai Authority, PolyU has established the PolyU–Qianhai Disruptive Technology and Innovation Research Centre and the PolyU Research Centre for Innovation and Technology (Qianhai). These centres mark a major step forward in the efforts of PolyU and the Qianhai Authority to jointly develop a Shenzhen–Hong Kong technology hub, fostering deeper cross-boundary integration of industrial development and strengthening research collaboration between industry and academia across the two regions.

To support the national 'Artificial Intelligence +' action plan, PolyU officially launched two new innovation and technology centres in April 2025. The launch was a joint effort, co-organised by PolyU's School of Design, the Policy Research Centre for Innovation and Technology (PReCIT), the Shenzhen Research Institute, and the Management Committee of Chaoyang Park of Zhongguancun Science Park. The two new centres, 創意科技研發中心(北京) and 科技及創新政策研究中心(北京), will aim to foster digital talent, strengthen the digital economy, and serve as a catalyst for enhanced industry–academia research collaboration between Beijing and Hong Kong.

Cross-border Innovation Initiatives by PolyU Unicorns

The Shenzhen Research Institute (SZRI) has actively supported PolyU by organising a variety of activities to strengthen ties with start-ups and unicorns. These included entrepreneurship sharing sessions and a global campus recruitment tour in November 2024, led by Dr Wang Lei, founder/CEO of the unicorn EcoFlow. In April 2025, SZRI also hosted the launch of Qianhai's '夢加速計劃·下一位獨角獸營' a move that reinforces PolyU's leadership in AI and technology innovation within the Shenzhen–Hong Kong ecosystem. These initiatives have energised the GBA's tech sector and accelerated cross-border innovation.

Fostering KT and Entrepreneurship with Technology and Social Innovations

PolyU Initiatives for Technology Commercialisation

PolyU is generating innovative impact through strategic initiatives and expanded networks. In 2024/25, the number of patent filings surged by 37% to 551, reflecting our strong research momentum.

To accelerate industry adoption, we are leveraging our network of 12 MTRIs/MTRCs across major cities in Mainland China to license and assign patents and technologies. To further incentivise inventors, we have increased their share of commercialisation revenue from 35% to up to 70%. This share can even reach 80% if inventors cover the patent costs. The University's portion is reinvested into a central fund that supports translational research, prototyping, and commercialisation efforts.

PolyU also has launched two new licensing schemes. The Trial License Scheme enables small and medium-sized enterprises to use technologies before formal licensing. The Express License Scheme streamlines licensing for patents filed over 10 years ago. Both schemes adopt a 'use first' principle, accelerating technology and market validation. In 2024/25, 43 licences were granted under these schemes, marking a 152% increase since their launch and contributing to an overall 139% year-on-year growth in licences granted.

Entrepreneurship Development: from Education to Acceleration

PolyU is dedicated to creating innovations and entrepreneurial ventures that benefit the world. Through PolyVentures, our signature start-up ecosystem, PolyU bolsters aspiring entrepreneurs among its students, alumni, faculty members, and research staff. We support PolyU start-ups at every stage of their entrepreneurial journeys, from education and ideation to incubation, acceleration, and fundraising. Over the years, we have nurtured more than 600 start-ups, over 160 of which were founded by faculty members. These include two listed companies, three unicorns, and 26 ponies.


Student-led Entrepreneurship Organisations

PolyU has established two thriving student-led societies, the Google Developer Group and the Entrepreneurship Society, to cultivate innovation and entrepreneurial spirit among our students. In the past year alone, these societies have organised 15 diverse activities, attracting and engaging nearly 900 students.

Secondary Major in Innovation and Entrepreneurship (X+IE)

PolyU's Secondary Major in Innovation and Entrepreneurship (X+IE) fosters global perspectives and entrepreneurial skills through interdisciplinary learning and practical experiences. In 2024/25, students joined a GBA field trip with Guangdong University of Technology, participated in an overseas entrepreneurship programme in Singapore, and completed internships at start-ups, multinational companies, and enterprises across the GBA, gaining valuable insights into diverse innovation ecosystems.
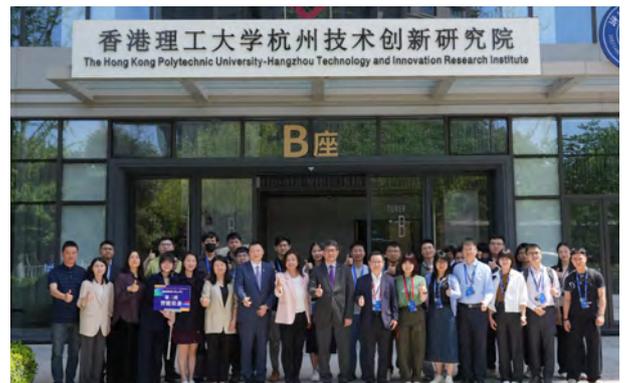
In April 2025, PolyU led a delegation of 80 representatives and over 30 start-ups to Hangzhou, where they conducted targeted site visits to AI, biomedicine, and advanced manufacturing enterprises. The participants toured the PolyU Hangzhou Research Institute, attended sector-specific roadshows and pitch sessions, and connected with investors and partners, successfully securing business opportunities and advancing PolyU's innovation ecosystem.

Ideation Funding Scheme

The Ideation Funding Scheme is an entrepreneurship programme designed to foster innovative thinking among talented young students through hands-on learning and student-led research. This year, the scheme collaborated with PolyU's School of Hotel & Tourism Management, Department of Management and Marketing, and School of Design, engaging 319 students who developed 79 innovative projects. Among these, 38 standout projects have been chosen for further entrepreneurial development and support.

PolyU's Unique Industrial Centre Supports Prototyping and Technology Development

PolyU's Industrial Centre (IC) distinguishes itself among local UGC-funded universities by offering over 170 engineering facilities, equipment, and maker spaces to support innovation and entrepreneurship. The IC enables researchers, students, and start-ups to develop prototypes and enhance product designs. Notably, it has supported Micro Fund awardee Ricefort in multiple competition wins. In 2024, the IC launched PolyU's first Innovation and Entrepreneurship Fair, attracting over 2,300 participants and showcasing student projects.

PolyU International Future Challenge

The PolyU International Future Challenge, launched in February 2025, is a flagship innovation and entrepreneurship competition open to global participants. It operates under a unique '1+N' framework and integrates education, research translation, incubation, and investment to support start-ups. The competition is based in Hong Kong and extends to six Mainland Chinese cities, each addressing local industry needs. The challenge offers training, consultations, corporate visits, and international exploratory tours to

destinations including Vietnam, Singapore, Shenzhen, Hangzhou, Wuxi, and Shanghai to broaden entrepreneurial perspectives. Winners receive funding, incubation support, and access to PolyU's PolyVentures ecosystem, thereby accelerating commercialisation and start-up growth.

GBA & Yangtze River Delta Innovation Programmes to Empower Youth Entrepreneurs

To promote innovation and entrepreneurship among Hong Kong youth, PolyU, with support from the Home and Youth Affairs Bureau, has launched two new initiatives offering immersive experiences and cross-border exchanges. The first, the GBA and Yangtze River Delta Innovation and Entrepreneurship Development Programme offers experiences in cities including Hangzhou and Guangzhou. The second is the GBA Innovation and Entrepreneurship Incubation Programme, a two-year journey designed to equip aspiring entrepreneurs with industry insights, connections, and market access.

Micro Fund Scheme and Incubation Support: Fuelling the Growth of High-Quality PolyVentures

PolyU is the first university in Hong Kong to collaborate with HKSTP to accelerate the commercialisation of innovation through the Micro Fund Scheme. Since its launch in 2011, the scheme has supported over 470 active start-ups founded by PolyU alumni, students, and staff, including 110 new start-ups in 2024/25, 80% of which advanced to HKSTP's ideation or incubation programmes. Furthermore, 96 of PolyU's start-ups have been admitted to HKSTP's ideation programme, ranking PolyU as No.1 among all Hong Kong universities. To maximise start-up success, beyond financial support, PolyU provides comprehensive training and incubation services, working closely with strategic partners such as HKSTP, Cyberport, the Chinese Manufacturers' Association of Hong Kong, and the Federation of Hong Kong Industries.

PolyU InnoHubs: Collaborative Co-Working Spaces for PolyU Entrepreneurs

Incubation Centres (InnoHubs) within MTRIs and key industrial regions connect PolyU's resources with external sectors. They support entrepreneurship and business development across Mainland China, Southeast Asia, and international markets. By June 2025, InnoHubs had supported over 440 PolyU start-up teams in fields such as AI, healthcare, and advanced manufacturing, fostering technological and economic growth. Notable partners include Peking University and Huawei, with support from Singapore's Infocomm Media Development Authority. In 2024/25, InnoHub@ Hong Kong supported 64 start-ups, while InnoHub@ Shenzhen welcomed 35.

PolyU has also established an off-campus co-working space, InnoHub@BHIC in Wanchai. This facility, managed by Shougang Holding (Hong Kong) Limited and Global Digital Creations Holdings Limited, connects start-ups with industry partners and investors, helping

to bring innovative technologies into practical use. To further strengthen its commitment to innovation and bringing technology to market, in June 2025 PolyU also signed a cooperation agreement with Peking University's Office of Science and Technology Development and the Peking University Lingang Innovation Center. This agreement aims to jointly advance technology commercialisation and entrepreneurial development.

Translational Start-up Postdoc Programme

The Translational Start-up Postdoc Programme, formerly known as the 'GBA Start-up Postdoc Programme', is Hong Kong's first initiative to foster research-based entrepreneurship among recent doctoral graduates. This structured two-year programme empowers postdocs to conduct translational research and launch tech ventures, benefitting from dual mentorship from academics and industry leaders. The programme has successfully nurtured 24 postdocs, with over 95% joining HKSTP's incubation programmes and securing over HK$27 million in follow-on funding. In the latest cohort, 21 new postdocs joined, benefitting from enhanced incubation at MTRIs and strong industry support.

Two-tier Angel Fund Scheme: Expediting Start-up Growth

To accelerate high-potential technology start-ups, PolyU launched its Angel Fund Scheme in 2023, offering funding in HK$1 million and HK$3 million tiers. Leveraging support from the Innovation and Technology Commission, the scheme attracted over 100 applications for the HK$1 million tier and over 30 applications for the HK$3 million tier in 2024/25. Following rigorous evaluation by industry experts and investors, 16 start-ups were selected for the HK$1 million tier, while eight were selected for the HK$3 million tier, significantly supporting their growth and innovation.

PolyU Entrepreneurship Investment Fund: Fuelling growth and Innovation

PolyU established the Entrepreneurship Investment Fund (EIF) to support the scaling up of start-ups featuring innovative technologies or business models. The EIF particularly focuses on ventures involving PolyU members or commercialising PolyU intellectual property. Through a rigorous vetting process, the EIF provides top-up or co-investment alongside other lead investors. As of 2024/25, the EIF has invested in 19 start-ups across various industries, fostering their growth and empowering them towards success.

RAISe+ Scheme: Turning Research into Real-world Applications

The HKSAR's RAISe+ Scheme, launched in 2023, aims to strengthen the city's innovation ecosystem by promoting collaboration between government, industry, universities, and the research sector. PolyU actively participates in RAISe+, leveraging the scheme to commercialise research and nurture impactful start-ups. In the first two rounds of the scheme, six PolyU projects received awards in the fields of advanced manufacturing, new materials, new energy, Chinese medicine, AI, and engineering. This highlights our research excellence and potential for real-world impact.

Start-up Stories

PolyU is proud of its strong tradition of nurturing the next generation of entrepreneurs. We advance the translation of research into real-world impact through the PolyVentures ecosystem. We believe that University recognition will not only encourage young entrepreneurs to pursue their ambitions but also inspire others to embark on their own entrepreneurial journeys. Below are brief introductions to some of the most promising ventures.

Libpet: AI-powered smart robotic scooters with anti-collision and stair-climbing capabilities driving next-gen urban mobility

Libpet, co-founded by PolyU engineering alumni Jojo XU Huafeng and Alex YUEN-yik, is transforming urban mobility with AI-powered smart scooters designed for rehabilitation groups, seniors, and people with disabilities. Recognised in Forbes 30 Under 30 Asia 2025 in the category of Industry, Manufacturing & Energy, Libpet has earned international praise. In May 2025 the company also raised US$3 million to accelerate its global expansion.

viAct: AI-powered 'Scenario-based Vision Intelligence' solutions for risk prone workplaces on safety, efficiency and compliance

viAct, co-founded by PolyU alumni Gary NG and Hugo CHEUK, is revolutionising construction management with AI-powered video analytics. The company's solutions enhance safety, productivity, and compliance in risk-prone workplaces. Supported by PolyU's entrepreneurship programmes, viAct secured a US$7.3 million investment in May 2025. The company's solutions have been adopted by major contractors in Southeast Asia and Europe, highlighting its impact and global recognition in smart construction.

ABRAM Therapeutics Limited: First-in-class long-acting drug for obesity and obesity-related metabolic diseases

ABRAM Therapeutics, a PolyU academic-led start-up, has become the first Hong Kong-based start-up accepted into the Roche Accelerator, marking a major milestone in its biopharmaceutical journey. The company's technology, ABarginase, pioneers a first-in-class, long-acting therapy for tackling obesity and obesity-related metabolic diseases. After demonstrating potent anti-obesity and insulin-sensitising effects in preclinical studies, ABRAM is now advancing its R&D. With support from PolyU and Roche, it aims to bring ABarginase from bench to bedside, addressing unmet needs in metabolic disease treatment.

LeafIoT Technology Limited: Revolutionising green asset management with AI and cutting-edge IoT solutions to advance global sustainability

LeafIoT Technology, a PolyU academic-led start-up, has gained international recognition for its LiFY-T tree-monitoring and green-asset management solution. Deployed across Asia, Europe, and North America, LiFY-T uses advanced sensors, LiDAR, and AI-driven analytics. This empowers urban forestry managers and city planners to make data-driven decisions, thereby advancing sustainability, achieving net-zero goals, and demonstrating LeafIoT's innovative impact in smart city development.

CeresRobotics AI: an AI-powered drone window cleaning system to foster low-altitude economy

PolyU academic-led start-up CeresRobotics AI is revolutionising façade maintenance. Its AI-powered drone window cleaning system uses advanced positioning and vision algorithms to automate the window cleaning process. Early pilot projects in Hong Kong have shown significant time savings and seamless integration with building management systems. Aligned with government low-altitude economy initiatives, CeresRobotics AI is now scaling globally, setting new standards for smart urban maintenance.

Social Innovations Addressing Societal Challenges

At PolyU, we champion both technological and social innovation to create a positive impact on society. Through the Jockey Club Design Institute for Social Innovation (J.C. DISI) and its various programmes and projects, we support initiatives that tackle social challenges and promote meaningful change.

ASCEND Tech for Good Scheme

The ASCEND Tech for Good Scheme (ASCEND) is a flagship initiative jointly operated by J.C. DISI and KTEO, with funding from The Hong Kong Jockey Club Charities Trust. ASCEND empowers youth-led start-ups to promote digital inclusion. The scheme launched in September 2024, supported three start-ups in its first cohort, and will open applications for a second batch in September 2025.

One notable success is Vidi Labs Limited, a start-up founded by two young entrepreneurs. Supported by both ASCEND and the Good Seed Programme, Vidi Labs' product, Seekr, helps the visually impaired and was recognised in Forbes' '30 Under 30 Asia 2025' in the 'Social Impact' category.

Shaw STEAMS for Good Programme

To inspire students and educators to apply their knowledge to create positive change, the Shaw STEAMS for Good Programme embraces a pioneering educational approach that incorporates social elements. This aligns with PolyU's vision of 'Education for Good'. Over the next five years, the programme plans to collaborate with 12 core schools, benefit 30 network schools, and reach more than 900 teachers and 2,600 students.

PolyU Jockey Club 'Operation SoInno'

Operation SoInno is J.C. DISI's knowledge transfer platform, supported by The Hong Kong Jockey Club Charities Trust. The platform addresses social challenges through collaborative innovation. During the reporting period, it delivered multiple impactful projects, symposia, and workshops. Highlights included co-designing iron trolleys for cleaners, hosting a community-building symposium, developing elderly-friendly assessment indicators, and creating a dementia simulation game toolkit.

Awards and Events Recognising PolyU's Innovations and Research Breakthroughs

PolyU InnoTech Open Day x Alumni Homecoming 2024

The PolyU InnoTech Open Day x Alumni Homecoming 2 024 showcased our impactful achievements in interdisciplinary research, knowledge transfer, and entrepreneurship. The on-campus event was designed to contribute to Hong Kong's development as an international innovation and technology hub. The event highlighted PolyU's research and entrepreneurial strengths, providing valuable opportunities for faculty members, students, alumni, I&T entrepreneurs, industry partners, and researchers to explore opportunities for collaboration.

PolyU Triumphs at International Inventions Exhibitions

PolyU has achieved significant global recognition in innovation and technology by winning 40 awards at two major international events: the 50th International Exhibition of Inventions Geneva and CES 2025 in Las Vegas.

- Geneva: PolyU received 38 accolades for 35 innovations, including two special prizes and 10 gold medals with Jury congratulations, highlighting our research excellence.
- CES 2025: PolyU earned two Innovation Awards in Accessibility & AgeTech, making us the only Hong Kong university to win CES Innovation Awards for two consecutive years. This underscores our leadership in healthcare, AI, smart cities, and IoT sensing.

PolyU Patents Achievement Award Presentation Ceremony 2024

The PolyU Patents Achievement Award was established to honour departments and inventors for their exceptional commitment to IP filing and research translation. In its inaugural edition, the award recognised the most active contributors over the past five years and the past year, highlighting PolyU's dedication to innovation and IP protection.

PolyU Scholar Awarded BOCHK Science and Technology Innovation Prize 2024

PolyU was recognised with the Bank of China (Hong Kong) Limited Science and Technology Innovation Prize 2024 for achievements in 'Artificial Intelligence and Robotics'. Prof. Yang CHAI was honoured for his pioneering AI sensor technology, which includes developing in-sensor computing frameworks that significantly advance the efficiency and capabilities of AI-driven vision systems.

PolyU Makes a Striking Debut at HICOOL 2024

At its debut in the HICOOL 2024 Global Entrepreneurship Summit and Competition, PolyU achieved remarkable success. Our researchers and start-ups won awards for pioneering innovations, including a quantum chip-based secure communication system and a radiation-free 3D ultrasound solution for scoliosis assessment.

These achievements underscore our leadership in global innovation and entrepreneurship. To build on this momentum and further strengthen collaboration between Beijing and Hong Kong, PolyU signed a strategic cooperation agreement with the HICOOL organiser in June 2025.

Chinese Culture Pivotal in Knowledge Transfer

Promoting Chinese Culture through the PolyU Chinese Culture Festival

To mark its 30th anniversary as a university, PolyU launched the inaugural PolyU Chinese Culture Festival in 2024, reaffirming our commitment to cultural education and national identity. The opening ceremony was officiated by Dr CHOI Yuk-lin, Secretary for Education of the HKSAR, and Dr LAM Tai-fai, PolyU Council Chairman. Co-organised with the Hong Kong Palace Museum and Tiangong University, the festival featured a diverse range of exhibitions, lectures, and workshops. A key highlight was the 'Yan Fu's Legacy and the Modernisation of Chinese Culture' series, which attracted over 20 international scholars and showcased PolyU's commitment to cultural knowledge transfer and global exchange.

Closing and Looking Forward

PolyU is a world-leading university renowned for excellence in education, research, and KT, serving Hong Kong and the wider region. Our commitment to innovation, KT, and entrepreneurship is reflected in a vibrant ecosystem that fosters collaboration between industry, academia, and research partners both internationally and in Mainland China.

With over fifty years of excellence in healthcare education, PolyU has leveraged its strengths in integrating medicine and engineering to advance healthcare technology and nurture talent for both Hong Kong and the Greater Bay Area. To build on this foundation, in March 2025, we submitted a comprehensive proposal to the HKSAR Government to establish the city's third medical school. This initiative aims to cultivate the next generation of medical professionals and leaders, equipping them to excel in an AI-driven healthcare landscape by leveraging our strong foundation in AI, health sciences, and engineering.

In line with the PolyU Strategic Plan 2025/26 – 2030/31, the University will continue to position itself as a leading institution and a preferred partner for addressing industrial needs and societal challenges. We are dedicated to amplifying the impact of our research to drive the nation's technological and industrial advancement while expanding translational research institutes in mainland cities through new partnerships with local governments. Additionally, we will strengthen innovation and impact by building sustainable partnerships with the wider community and fostering a vibrant culture of KT and innovation across the University.

PolyU is dedicated to educating the thinkers, communicators, and innovators who drive positive change. Moving forward, we will continue to pursue excellence and impact through our education and research, strengthening our position as a world-leading university and making significant contributions to Hong Kong, the nation, and the world.

Appendix 1: Key Performance Indicators

A summary of the key performance indicators for various KT areas are presented in the table below, with financial figures expressed in HK$'000:

Performance Indicators	2023/24	2024/25
Patenting & Licensing		
No. of patents filed [Note 1]	402	554
No. of patents granted [Note 1]	155	128
Accumulative no. of licenses granted	200	249
Income generated from IPR [Note 2]	$34,229	$33,308
Expenditure involved in generating income from IPR	$13,199	$15,090
Consultancy, Collaborative / Contract Research & Spin-off / Joint Ventures		
No. of collaborative research, income generated and total contract value [Note 3]	542 $274,809 $1,068,048	611 $456,156 $2,030,268
No. of contract research, income generated and total contract value [Note 4]	505 $230,234 $1,019,299	638 $445,123 $1,504,485
No. of consultancy projects and income generated [Note 5]	441 $50,796	535 $80,315
No. of economically active spin-off companies [Notes 6]	531	675
Net income generated (or net loss arising) from spin-off companies [Notes 7]	$2,292	$667
Other Knowledge Transfer / Dissemination Activities		
No. of equipment and facility service agreements and income	102 $4,680	128 $5,744
No. of student contact hours for business or CPD needs [Notes 8,9]	3,285,446	3,642,332
Income received from CPD courses [Note 9]	1,489,802	1,962,673
No. of public lectures / symposiums / exhibitions and speeches to community	654	667
No. of performances and exhibitions of creative work by staff or students	69	37
No. of staff engaged as members of external advisory bodies	482	438

Notes:
1. The reported figures include patent or patent applications co-owned by PolyU and external parties as well as patent or patent applications owned or co-owned by PolyU's subsidiaries.

2. The reported figure includes license income generated from the IPs owned or co-owned by PolyU or PolyU's subsidiaries.

3. Collaborative research income reported is on cash-receipt basis from on-going projects in the reporting period. For internally funded projects involving third party collaborators for knowledge transfer, only the number of projects is counted, while income and contract value are not included. Starting from 2024/25, income from InnoHK and PolyU's Mainland Translational Research Institutes (MTRI) is included.

4. Contract research projects are those involving third parties from public, private and NGO sectors. The income reported is on cash-receipt basis from on-going projects in the reporting period. From 2024/25, income from InnoHK and MTRIs is included. An in-kind contribution of $93 million from Cyberport is also included.

5. The reported figure includes income from corporate and executive development training related consultancies (including those delivered by KTEO as mentioned in Note 9 below) and income from consultancy and advisory services, such as investigation, advisory on business, management, social, technical or policy related issue(s), as well as product, technology, materials or process enhancements. Starting from 2024/25, income from InnoHK, MTRIs, and consultancies undertaken by individual staff as outside activities (excluding clinic service and teaching) is included.

6. The reported figure includes the number of all active start-ups that were either funded by PolyU funding programmes (including but not limited to PolyU Micro Fund, China Entrepreneurship Fund (CEF), Tech Incubation Fund (TIF), Tech Launchpad Fund (TLF), Maker Fund, Good Seed Programme, TSSSU fund, Entrepreneurship Investment Fund (EIF)), or those obtained IP license from PolyU or PolyU's subsidiaries for commercialisation. Subsidiaries set up as operating vehicles for specific functional purposes, e.g., PTeC, Hotel ICON and PolyU Base in Shenzhen are not included.

7. The reported figures represent the license income generated from PolyU supported start-ups which licensed PolyU's IPs. This license income was also included in the "Income generated from IPR" (refer to Note 2 above).

8. The student contact hours are defined to be the number of enrolments multiplied by the number of contact/course hours.

9. The CPD courses include award-bearing and credit-bearing programmes (both in and outside Hong Kong) for learners already in work who are undertaking the course for purposes of professional development / upskilling / workforce development, in addition to short term non-credit-bearing training programmes. The reported figures include both full-time and part-time taught postgraduate programmes, part-time award bearing programmes offered by PolyU Proper, SPEED and non-award bearing courses offered by PolyU Proper, SPEED and KTEO, including the income of corporate and executive development training delivered via PTeC in the form of consultancy projects.

Appendix 2: Details of Selected Impact Cases

Case 1: Liverscan®: Palm-sized Image-guided Transient Ultrasound Elastography for Live Assessment

1. Summary of the Impact

Chronic liver disease, affecting approximately 844 million individuals globally, is a pressing public health concern. Fatty liver, prevalent in 25% of the population, can progress silently to liver fibrosis, cirrhosis, and eventually liver cancer. Early detection and management are crucial to prevent severe irreversible outcomes. The World Health Organization (WHO) recommends transient elastography (TE) for non-invasive liver fibrosis assessment, correlating liver stiffness with shear wave speed via ultrasound measurement. Traditional TE devices, however, are often bulky and lack visual guidance, limiting their clinical utility.

In response, Ir Prof. ZHENG Yongping developed Liverscan®, integrating real-time B-mode imaging with TE and ultrasound attenuation measurement to assess liver fat content. The device enhances portability and efficiency, reducing examination time to two minutes and accuracy validated against existing technologies. Liverscan® has been deployed in screening programmes and hospitals in Hong Kong and Mainland China and is poised for global distribution with multiple medical device regulatory approvals obtained.

2. Underpinning Research

Liver fibrosis is a condition resulting from prolonged inflammation and scarring in liver with a global prevalence of around 7%. Chronic liver diseases (CLD), often triggered by hepatitis B or C viral infection, over-consumption of alcohol or steatotic liver diseases (commonly known as fatty liver) are common contributors to the pathogenesis of liver fibrosis which can ultimately progress to cirrhosis. Cirrhosis is an irreversible condition that leads to loss of liver functions or even liver cancer. Liver fibrosis is a silent killer as patients are often presented as asymptomatic until signs of cirrhosis appear making cirrhosis one of the top leading causes of death worldwide.

Historically, early detection of liver fibrosis and fatty liver has been challenging due to the lack of reliable non-invasive quantitative modalities. Liver biopsy has long been considered the gold standard for diagnosis of liver fibrosis, involving the insertion of a long needle through skin to collect liver tissue samples for histological evaluation. The procedure is painful and carries risks of complications rendering it unsuitable for routine check-ups. Although serum biomarker method is minimally invasive, its specificity and accuracy have been questioned. Consequently, transient elastography (TE) emerged in recent years as a non-invasive ultrasound-based modality to assess liver fibrosis by measuring the intrinsic mechanical property of liver, i.e. stiffness. The WHO now recommends TE as the established and best-validated approach for the first-line assessment of liver fibrosis in CLD cases. TE quantifies liver tissue stiffness by measuring the speed of a shear wave propagating into the liver parenchyma induced by a mechanical vibration excitation on the skin.

However, accuracy of TE measurements is highly dependent on the operator's experience to avoid including non-liver tissues such as kidney, lung, blood vessels or focal lesion within the effective measurement area. Conventional TE devices only provide limited guidance using M-mode as single-element transducer is adopted to carry out the scanning mechanism. Accuracy and efficiency of liver stiffness measurement can be compromised without adequate visual guidance. In addition, most existing TE devices are bulky in size and relatively immobile, thus confining their use to clinical examination room or hospital setting.

In response to these challenges, Prof. Zheng and his team in PolyU developed Liverscan®, a palm-sized wireless device that combines TE with a real-time ultrasound image guidance (PolyU patented technology). This innovation greatly enhances the accuracy and efficiency and reduced failure rate in measurements by providing straightforward anatomic B-mode images of the liver.

The journey of Liverscan® development began in 2008 focusing on the design of integrating real-time B-mode ultrasound imaging and TE in the same system. A prototype was then developed and its performance on liver fibrosis assessment was validated in comparison with a commercially available product by a human clinical trial, which has been published. This technology also obtained patent protection in China and the United States.

To expand the application of Liverscan® technology in point-of-care ultrasound, the team revolutionised the hardware design into a palm-sized probe. This all-in-one miniaturized device connects to commercial computer, notebook, or tablet via Wi-Fi for instant data transfer and analysis. Reliability of measurements remains highly comparable to existing liver elastography products while the reduced footprint in the new Liverscan® system opens up the potentials of examination in non-clinical settings.

Furthermore, steatosis measurement method for fatty liver was developed by analysing the ultrasound signal intensity during scanning. The function is also included In Liverscan® for simultaneous analysis of multiple liver health risk factors. In light of advancements in artificial intelligence, the team has developed deep learning algorithms to enhance the accuracy and reliability of liver stiffness measurement results generated by the device. AI has also been used to automatically label liver tissues in B-mode ultrasound images for guiding the operator to achieve easy measurement, particularly for non-professional users.

Meanwhile, the team has investigated the potential confounding factors in TE associated with the effects of measurement location on the rib space, respiratory cycles and body posture aiming to establish a standardization in clinical TE management protocol, with multiple journal papers published.

Figure 1: First generation of Liverscan prototype (2008)

Figure 2: Liverscan portable system

PolyU Staff Screening Program

Since Dec 2024

Operation in GH042 Jockey Club Smart Ageing Hub

Figure 3: Liver health screening on PolyU campus, which can be expanded to other institutions or organisations

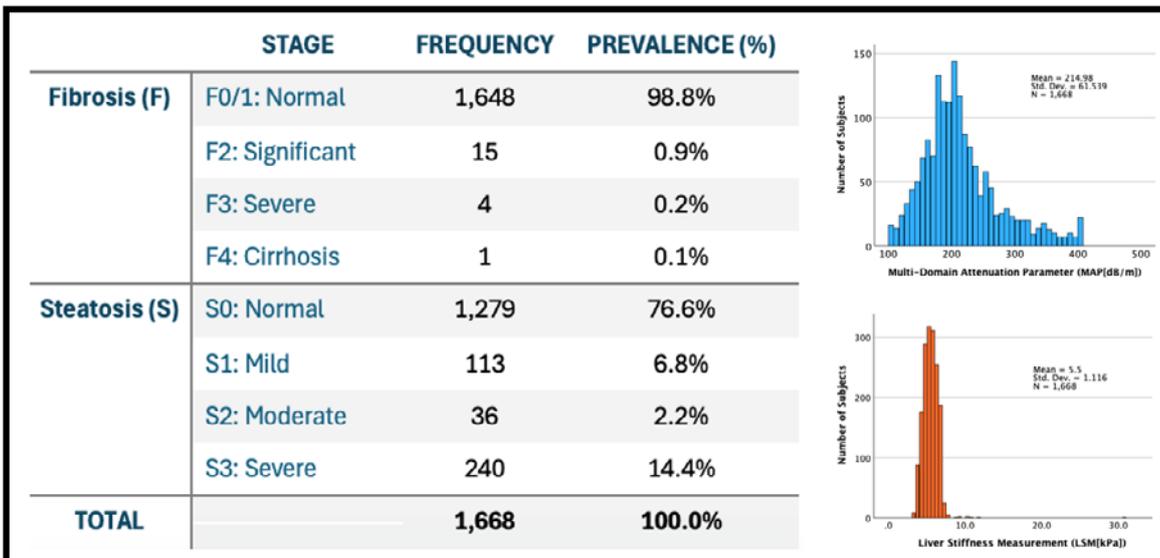| STAGE		FREQUENCY	PREVALENCE (%)
Fibrosis (F)	F0/1: Normal	1,648	98.8%
	F2: Significant	15	0.9%
	F3: Severe	4	0.2%
	F4: Cirrhosis	1	0.1%
Steatosis (S)	S0: Normal	1,279	76.6%
	S1: Mild	113	6.8%
	S2: Moderate	36	2.2%
	S3: Severe	240	14.4%
TOTAL		1,668	100.0%

Figure 4: Liver health screening intermediate results in PolyU, which helps staff be aware of their liver health conditions timely and adopt proper intervention, including many silent cases (consents have been obtained from staff that data will be used for research and publication).

Figure 5: An example of community screening in district health centre at county level in China

Figure 6: Community screening of liver health facilitated by Liverscan at different places in China, totally over 20,000 subjects have been screened in 2024-2025. These screening programmes help many people be aware of their silent liver diseases and follow up with proper intervention approaches.

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4.   Impact and Benefits

Liverscan® represents the advancement of hand-held wireless, image-guided TE device in the field of hepatology. The device is designed to be used anywhere and anytime and capable to be operated without formal medical training. Given the high prevalence of liver fibrosis and fatty liver disease, there is critical need for technology that is accurate, reproducible, highly accessible and cost-effective for point-of-care and preventive assessment. Liverscan® has significantly scaled up liver screening programs, facilitating the early identification of patients and potentially yielding substantial cost savings for healthcare systems. Ongoing product development aims to further simplify the device for future home-based examinations of fatty liver.

This technology catalysed new research opportunities in TE algorithm development, clinical practise and epidemiology. Large scale population prospective studies led by Prof. Zheng and his team are currently underway. The team has also initiated and supported recurrent community screening programmes in Hong Kong, Shanghai, Zhejiang Province and Anhui Province in China over the past year, benefiting over 20000 individuals. Significant numbers of cases at risk of potential liver fibrosis and fatty liver have been identified which requires continuous follow-up. This underscores the importance of early detection.

Economically, the portability and reduced production costs of Liverscan, compared to traditional TE devices, lower examination costs by reducing examination time, enhancing measurement accuracy, and increasing accessibility to a broader population. Liverscan® significantly improves the assessment of chronic liver disease by reducing examination time to just two minutes while maintaining accuracy at approximately one-fifth the cost of conventional devices. This enables more affordable TE examination to identify potential patients. The cost of these devices can reach up to HK$2 million per unit, with patients in Hong Kong potentially incurring charges of up to HKD1,200 per scan.

Liverscan® exemplifies successful university knowledge transfer. Professor Zheng and his research alumni founded the Hong Kong start-up company Eieling Technology Limited in 2018. The company has experienced rapid growth, expanding to cities across China, creating job opportunities, and attracting over HKD 34.5 million in funding and investments. The company focuses on commercialization of Liverscan® and has obtained medical device clearance 510(k) from US FDA and class III medical device registration in the China National Medical Products Administration. Over 30 units of Liverscan have been installed in clinics and hospitals in various locations including Hong Kong, Macau, China, Vietnam, USA and Egypt. Liverscan has also garnered widespread international recognition for its technological innovation and commercial potential.

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Case 2: Generative AI Enabled Precision Diagnosis

1. Summary of the Impact

Eyetelligence is a company that integrates advanced artificial intelligence systems, whose technology supported by the team of Prof. Mingguang He and Dr. Danli Shi at The Hong Kong Polytechnic University. By combining generative AI-powered multimodal image generation with multi-dimensional fundus vascular quantification, Eyetelligence empowers healthcare professionals with cutting-edge tools for early detection and accurate diagnoses, making a profound impact on preventing vision loss worldwide.

2. Underpinning Research

Cross-modal Image Generation

Prof. He's team utilizes advanced generative artificial intelligence (GenAI) to generate multi-frame fundus fluorescein angiography (FFA)/indocyanine green angiography (ICGA) images or dynamic videos from a single color fundus photography (CFP) image. These generated angiographic images and videos closely match real angiography results, capturing detailed features of chorioretinal vasculature and lesions. By integrating generated FFA/ICGA images with real CFP, the system significantly enhances the accuracy of diagnosing diabetic retinopathy, diabetic macular edema, and age-related macular degeneration. This innovation reduces diagnostic errors while improving precision and efficiency in chorioretinal disease detection.

This innovation eliminates the risks associated with intravenous dye injections while accurately detecting vascular abnormalities. By enhancing efficiency and precision, it redefines retinal disease screening, offering a faster, safer, and more accessible solution for high-quality eye care.
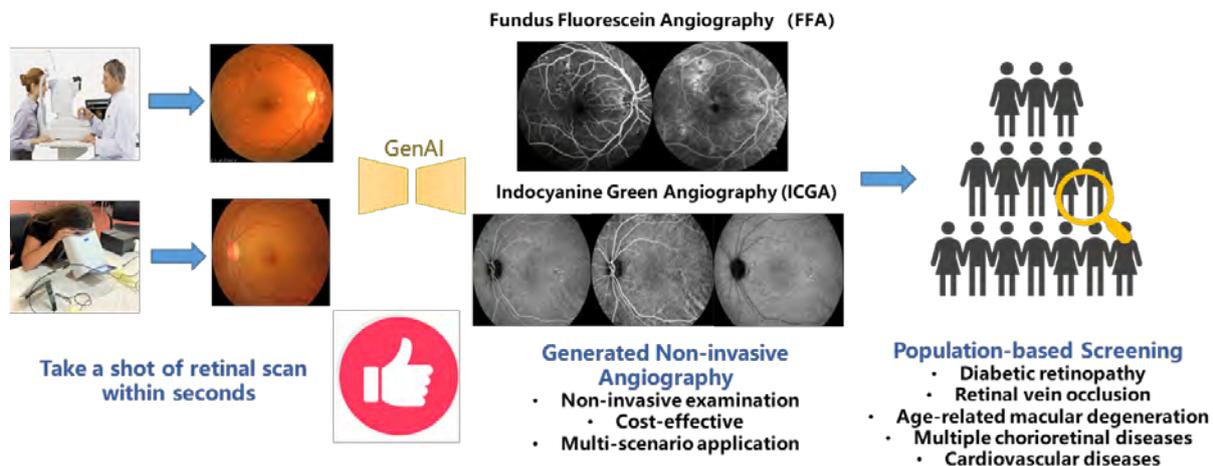
Figure 1. Demonstration of non-invasive fundus angiography and its potential applications.

Vascular fingerprints

Prof. He's team has developed retinal and choroidal vascular fingerprints, an innovation that quantifies hundreds of fundus vascular parameters derived from imaging modalities such as CFP, FFA, and ICGA. These parameters allow for detailed analyses of vascular calibre, complexity, tortuosity, branching angles, and density, providing a comprehensive understanding of the vascular system. Extensive validation has demonstrated that these vascular fingerprints are biomarkers for ocular diseases, as well as systemic conditions such as stroke, coronary heart disease, and ageing.

This technology offers critical insights into the pathological mechanisms underlying chorioretinal diseases, paving the way for personalized diagnostic and treatment strategies. Beyond ophthalmology, these vascular fingerprints

reflect the condition of the cardiovascular and cerebrovascular systems, making them a powerful tool for the non-invasive and efficient screening of heart, brain, and aging diseases.
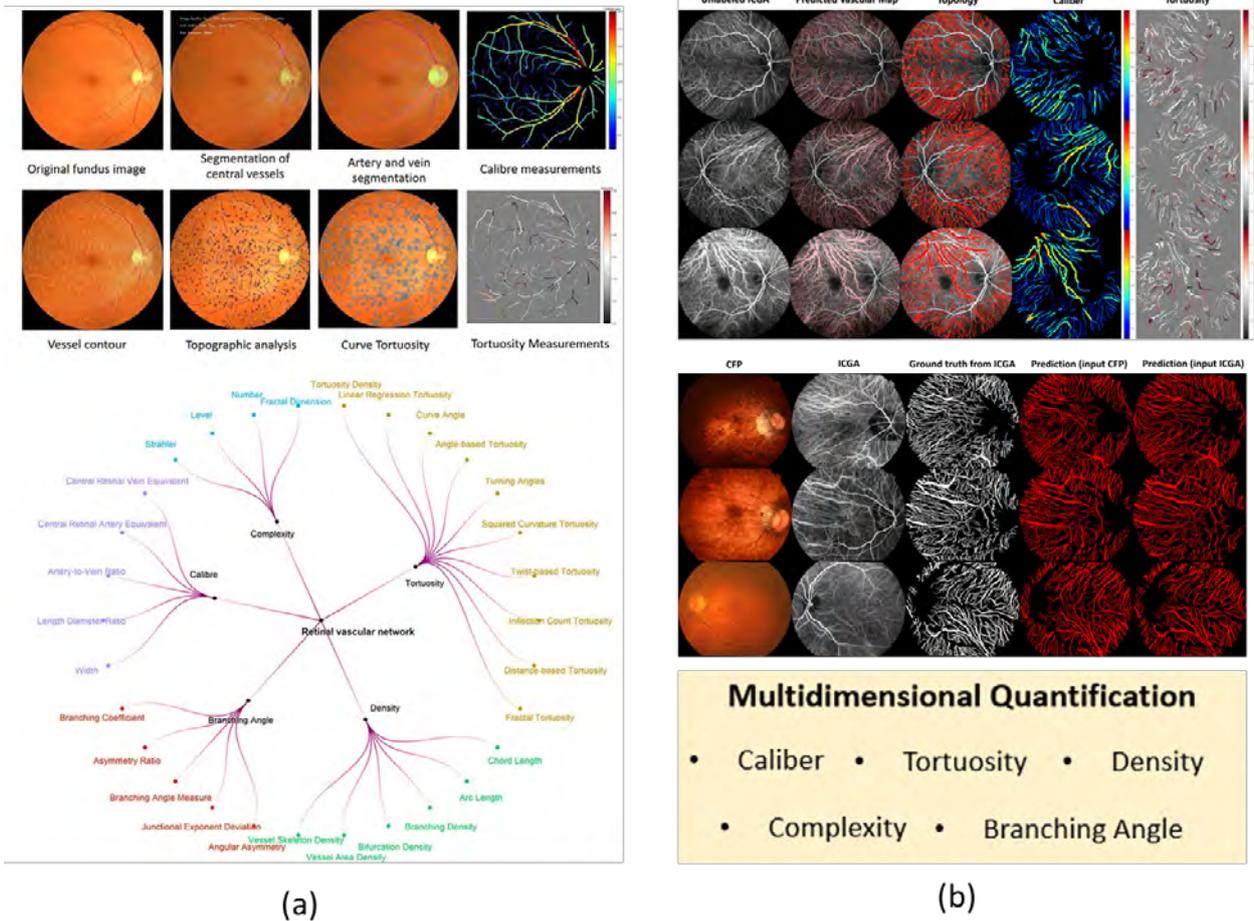
Figure 2. Illustration of retinal and choroidal vascular fingerprints. (a) Retinal vascular fingerprints. (b) Choroidal vascular fingerprints. Both encompass hundreds of quantitative metrics, including measurements for calibre, tortuosity, density, complexity, and branching angle.

3. References to Research

Status	Project Title	PI	Funding Sources	Funding Amount (HKD)	Start Date
On-going	Smart primary healthcare and eyecare service: from data to algorithms and real-world solutions	Mingguang He	RGC/UGC Funding	7,685,000	2023-03-01
On-going	Clinical Validation of Non-Invasive FFA Generation Technology in Diabetic Retinopathy Diagnosis: A Multicenter, Randomized Controlled Trial Assessing Accuracy and Efficacy	Danli Shi	GRF	1,064,634	2026-01-01

4. Impact and Benefits

The cross-modal image generation system can produce realistic fundus angiographic images and dynamic videos to enhance the detection of fundus diseases in a safer and more time-efficient manner. The advanced retinal and choroidal vessel fingerprints provide a precise and comprehensive evaluation of chorioretinal vessel abnormalities. This innovation aids in understanding the pathological mechanisms behind chorioretinal and systemic vascular diseases and improves disease management strategies. The developed technologies have been applied in various clinical centers in China and Denmark.

5. References to the Corroboration of Impact and Benefits

Research outputs

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- Chen R, Zhang W, Song F, Yu H, Cao D, Zheng Y, He M, Shi D. Translating color fundus photography to indocyanine green angiography using deep-learning for age-related macular degeneration screening. *npj Digital Medicine*. 2024;7:34. doi: 10.1038/s41746-024-01018-7

- Zhang W, Huang S, Yang J, Chen R, Ge Z, Zheng Y, Shi D, He M. Fundus2Video: Cross-Modal Angiography Video Generation from Static Fundus Photography with Clinical Knowledge Guidance. Paper/Poster presented at: Medical Image Computing and Computer Assisted Intervention – MICCAI; 2024; Morocco.

Awards

- Gold Medal at the 50th Geneva International Exhibition of Inventions-Seeing the invisible: Generating Non-invasive Angiography as an Alternative to Invasive Retinal Examination.

- Special prize awarded by French and European Inventors Association--Seeing the invisible: Generating Non-invasive Angiography as an Alternative to Invasive Retinal Examination.

Figure 3. Prof. He and Dr. Shi received the Gold Medal at the 50th Geneva International Exhibition of Inventions in 2025.

Media coverage

- "Retinal vascular fingerprints predict incident stroke: findings from the UK Biobank cohort study" was mentioned by 93 international news outlets - https://bmj.altmetric.com/details/172983043/news.

Case 3: Advanced Smart Textiles for Health and Wellbeing

1. Summary of the Impact

The front-line research of advanced smart textiles at SFT has resulted in creation of several new technologies, licenses to companies and start-up companies that made significant contributions to the industrial and societal advancement.

2. Underpinning Research

For over two decades, PolyU's SFT has been at the forefront of smart fibre research, making significant contributions to this interdisciplinary field. One notable example is the work led by Prof. Tao Xiaoming, Chair Professor of Textile Technology. Her research has focused on developing various soft sensors and other devices, including polymeric optic fibre grating sensors and conductive knitted-fabric strain sensors. Through mechano-electro-magnetic analysis, she has revealed the sensing behaviour of optical fibres under complex deformations within the textile structures. Various biomechanic models and algorithms for skeletal muscle activities and gaits have been developed and validated via clinical studies. Based on coupled analysis of fluid dynamics and heat transfer, the team also developed a range of new fluidic fabrics that achieved the world record of mode-switching time of less than 10 seconds from 5°C to 40°C and the highest thermal transfer efficiency between the fabric and human skin, close to that of water emersion, which are essential for wearable applications with limited electric power supplier of battery. Functional fibres of high infrared emission were developed by physical modification of fiber cross-section without addition of chemical compounds. Additionally, practical smart systems have been created, such as footwear for patients with diabetes and Parkinson's disease, and a Rapid Temperature Contrast Therapeutic System used by the Hong Kong Sports Institute for athlete recovery.

3. References to Research

- Mechanisms and Key Technologies of Multi-Sensory Emulation Wearable Devices (MSEWD), TRF/RGC, (PC), 2024.
- Research Institute of Textiles and Accessories, PolyU Jinjiang RI for Technology Innovation (PC), 2023.
- Trial: Intelligent compression stockings for promoting active health, ITC/HKRITA (PC), 2023.
- Wearable System with Adaptive Cooling and Heating for Sport Recovery- COOLWEAR, Sport Science Research Fund, HKSI (PC), 2022.
- Study of Continuous-mode Wearable Electric Generators made from Ionic Hydrogel, GRF (PI), 2022.
- Key technologies for textile Interaction System, ITF(PC), 2022.
- Study of Electronically Controllable Fabric Handle Simulator for Online Applications, GRF(PI), 2021.
- Design, Modeling, Fabrication and Evaluation of Fiber-based Thermoelectric Generators, GRF(PI),2020.
- Macroscopic PANI-graphene hybrid fibers for wearable thermoelectric devices, PolyU (UGC), (PI), 2020.
- Key technologies of customized intelligent medical pressure clothing, ITF-HKRITA (PC), 2020.
- Structure, properties and modelling of flexible thermoelectric composites for fiber-based wearable thermoelectric energy conversion systems, GRF(PI), 2019.
- Wearable health monitoring technologies, an international company (PI), 2019.
- Trial: Intelligent wearable system for enhancing mobility of people with Parkinson's disease, ITF (PI), 2019.
- Technology development of fine electronic yarns for knitting and embroidery, ITF, (PI). 2018.

4. Impact and Benefits

This pioneering work has resulted in technologies licensed for wearable sensing garments and footwear. Additionally, their research has also led to the establishment of three start-up companies that utilize these technologies. Guangzhou Zhikang Technical Co. produces smart yoga pants and breathing belts, enhancing sports and rehabilitation training while ensuring user comfort. Ningbo Aide Technology Co., Ltd. offers intelligent ECG clothing for real-time health monitoring, facilitating personalized medical care. Supersense Technical Co. Ltd. develops EEG products and footwear systems that monitor gait and diabetic foot conditions. During the review period, the electronic textile-based products and services have created 155 jobs, generated over RMB 26,600,000 in sales, benefited 6 healthcare-related institutions and 106,300 users in rehabilitation, exercise, biopotential monitoring, etc. The mass production by the invented functional fiber technology has generated RMB 60,000,000 in sales, 10 new jobs and there are 2,000 tons of potential orders being prepared for production. Collectively, the KT activities have generated over 165 jobs, benefited more than 106,300 users, and created over RMB 86.6 million in economic value as of June 2025.

5. References to the Corroboration of Impact and Benefits

Research Output

- Tao XM, 2001, Smart Fibers, Fabrics and Clothing – Fundamentals and Applications, Woodhead, Elsevier, CRC, Textile Institute.
- Yu JM, Tao XM, Tam HY, Yang DX and Demokan S, 2006. Photosensitivity and grating development in trans-4-stibenemethanol-doped poly(methylmethacrylate) materials, Optics Communications, 265 (1): 132-139.
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- Zhu RB, Liu TY, Balilonda A, Luo YH, Ma KM and Tao XM, 2025. Green, Safe, Durable, Printed Fabric Hygroelectric Generators for Wearable Systems, *Adv. Mater.* 2502091.
- Ma KM, LL Ma, RB Zhu, J Yang, S Liu, XM Tao, 2025. Textile-Based Mechanoreceptor Array with Tunable Pressure Thresholds for Mutli-Dimensional Detection in Healthcare Monitoring, *Adv. Fiber. Mat*. 1-15.
- Li D, X Wang, Q Li, F Wang, XM Tao, 2025. Muscle fatigue identification and prediction in motion using wearable device with power and torque-based features, *Wearable Elect.*, 2, 62-68.
- Yang J, Y Xiong, J Piao, M Leung, G Liu, M Zhu, S Tang, L Zhang, XM Tao, 2025. Wearable Fluidic Fabric with Excellent Heat Transfer Performance for Sports Recovery, *Adv. Sci.* 12 (8), 2411691
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- Li L., Yan F., Tao Y., Yang C., 2018. 一种异形纤维在红外辐射材料及纺织品中的应用, CN201810724626.

Awards

- Textile Frontier Scientific Award, China Society of Textile Engineering (one award per year worldwide), 2024.
- Rapid H: A wearable fast recovery system, European Product Design Award, Honorable Mention, Farmani Group, Europe, 2024.
- Gold medal, the 48th International Exhibitions of inventions of Geneva, 2023
- Silver medal, the 48th International Exhibitions of inventions of Geneva, 2023
- Golden Award at the 47th International Exhibition of Inventions of Geneva, 2022
- Silver Medal at the 44th International Exhibition of Inventions of Geneva, 2022
- IAAM medal, IAAM/AL212/05-21, International Association of Advanced Materials, 2021.
- Guanghua Engineering Scientific and Technology Award, Chinese Academy of Engineering, 2020.

Case 4: Smart Fire Safety and Firefighting in Era of Artificial Intelligence

1. Summary of the Impact

Prof. Xinyan Huang's team has developed advanced intelligent building fire protection systems and AI-driven fire forecasting tools in close collaboration with the Fire Services Department and leading property management companies. These innovations improve emergency responses and have been adopted across multiple industries. Prof. Huang's research also addresses fire safety in sustainable energy systems, such as solar panels and lithium-ion batteries, ensuring fire resilience in new energy buildings. His work on smouldering fire enhances the understanding and mitigation of global wildfire hazards. He has also developed advanced air-vortex fire suppression technology for microgravity environment, showing great promise for application in Space Station and future missions to the Moon and Mars. Today, PolyU is leading the world's research on fire safety and smart firefighting.

2. Underpinning Research

The research led by Dr Xinyan Huang over the last years has been focusing on smart firefighting technologies, particularly, applying new methods, such as Artificial Intelligence (AI) and Internet-of-Things (IoT), to improve urban fire safety, support fire services, and implement new research findings to impact diverse scientific communities, such as Safety Science, Built Environment, Transportation, Energy and Ecology. Right now, PolyU is leading the world's research on fire safety and smart firefighting.

AI-Driven Smart Firefighting. Novel research has been done on the most advanced intelligent building fire protection system with close collaboration with the fire services department and leading property management companies. The system combines smart building and detailed fire scenario database that is pre-trained by the deep learning algorithm. Once the fire occurs, the latest digital twin technologies enable firefighters to acquire detailed spatial and visual fire information. The real-time information can be transferred via the state-of-the-art wireless technology to the cloud. Then, AI engine delivers accurate and super real-time fire forecasting for supporting the emergency response. Moreover, the ground-breaking smart software has been developed for fire engineering design software using the AI method that has been adopted in the industry and will change future fire engineering practices.

Fire Safety for Carbon Neutrality and Sustainability. Emerging sustainable energy resources, like solar panels, hydrogen and battery energy storage system, are promising solutions to address carbon neutrality and global climate change, but all these new energy technologies have large fire hazards. Systematic research, integrating AI and IoT technologies, has been performed on the flammability and fire phenomena of these new materials and energy systems, including engineered timber, Li-ion battery, electric vehicle (EV), composite façade panel, and high-energy cables. The research outputs will deepen the scientific understanding of fire phenomena in new energy systems, ensure the fire resilience of new-energy buildings, and promote Hong Kong's leadership in the safe application of new energy technologies for carbon neutrality and sustainability.

Fire Safety for Wildland and Space Exploration. The flameless smouldering fire is the largest wildfire on Earth, contributing to global warming and regional haze. Advanced research has been carried out to understand and mitigate smouldering wildfire hazards with new models and AI methods. Extinction limits for underground wildfire have been quantified, and the effectiveness of wildfire detection and suppression methods has been systematically examined. To support China's space program, Dr Huang has proposed new experiments to study smouldering fire and evaluate fire hazards in the microgravity spacecraft environment. Advanced air-vortex fire suppression technology has been successfully demonstrated in the Microgravity Drop Tower, which has a great potential for applying in the China's Tiangong Space Station and future space missions to the Moon and Mars.

3. References to Research

- Development of Key Technology and Equipment for Whole Process Safety of Coupled Electrochemical Energy Storage Station, **Key-Area Research and Development Program of Guangdong Province**, RMB 3.2M, co-PI, 1/1/2024 – 31/12/2026.
- Intelligent Emergency Digital Twin System in Metro Station for Fire Evacuation, **MTR Research Funding Scheme**, HK$ 1,378,750, PI, 1/1/2024 – 31/12/2026.
- Smoldering Wildfire, **NSFC Excellent Young Scientists Fund**, RMB 2M, PI, 1/1/2024 – 31/12/2026.
- SureFire: Smart Urban Resilience and Firefighting, **RGC Theme-based Research Scheme**, HK$ 33M, co-PI, 01/01/2020 – 31/12/2025.

4. Impact and Benefits

- **Attracted over HK$ 10M Collaborative and Consultancy Projects**, with technologies being implemented on building infrastructures and new energy systems. Dr Xinyan Huang has collaborated with various leading infrastructure development companies (e.g., MTR, Citic Pacific, Govesete), energy company (i.e., China Southern Power Grid) and Fire Services Departments worldwide to develop customized smart solutions for fire safety, energy safety and smart firefighting.
- **RGC Theme-based Research Scheme (TRS) project was funded.** As the main co-PI, Dr Huang's research on smart firefighting contributes to winning of RGC TRS Project "SureFire: Smart Urban Resilience and Firefighting" in 2019/20, with a total of HK$ 33.33M. The project also collaborates with HK Fire Services Department and top universities and companies.
- **NSFC Excellent Young Scientists Fund (HK & Macao) was funded.** Dr Huang's research on Smouldering Wildfire won the NSFC Excellent Young Scientists Fund in 2023 (one of only two awardees of PolyU) with a total of ~HK$ 2.2M.
- **Development of Multiple National Standards on Fire Safety.** Dr Huang's research on dynamic exit sign has support the development of fire evacuation regulation made by US National Fire Protection Association (NFPA). His research on battery and electric vehicle (EV) fire are well recognized by the academia and industry, which have led to the development of China's National Standards on evaluating battery energy storage system and conducting EV fire tests and investigation. Dr Huang has also co-organized multiple international workshops on smart firefighting to establish new international standards in Tsinghua (2023), Tsukuba (2023), and PolyU (2024).
- **Inventions and Patents for Establishing Start-ups.** The research and innovation over the last 5 years has led to over 20 patents (10 granted). These research outcomes and innovation have led to two start-up companies, GABES (funded by PhD student, Ho Yin Wong, in 2020) and WideMount Dynamics Tech (funded by PhD student, Meng Wang, in 2022). GABES develops a Smart Building Emergency System by using the PolyU patents, which has received over HK$ 2 million of investment from the PolyU Maker Fund and HK Tech Angel fund and entered Cyberport Incubation Programme. WideMount develops the next-generation intelligent autonomous firefighting robots, which received the PolyU Micro Fund and entered the HKSTP Incubation Programme.

5. References to the Corroboration of Impact and Benefits

Three Key References

- T. Zhang, F. Ding, Z. Wang, Fu Xiao, C.X. Lu, X. Huang* (2024) Forecasting Backdraft with Multimodal Method: Fusion of Fire Image and Sensor Data, Engineering Applications of Artificial Intelligence, 132, 107939.
- Y. Liu, L. Zhang, Y. Ding, X.J. Huang, X. Huang* (2024) Effect of Thermal Impact on the Onset and Propagation of Thermal Runaway over Cylindrical Li-ion Batteries, Renewable Energy, 119910.
- Y. Qin, Y. Zhang, Y. Chen, S. Lin, Y. Shu, X. Huang*, M. Zhou (2025) Impact of Snow on Underground Smouldering Wildfire in Arctic-Boreal Peatlands, Environmental Science & Technology, 59, 8, 3915–3924.

Three Key Patents

- X. Huang, T. Zhang, X. Wu, F. Xiao, Q. Wang, A. Usmani, A system, device and method to collect the real-time 3D data from the fire scene, China Patent, No. ZL 2020115986305.
- X. Huang, X. Zhang, L. Su, X. Wu, Y. Zeng, A method for evaluating fire engineering designs based on artificial intelligence and the apparatus, China Patent, Application No. 202111317179X.
- X. Huang, C. Xiong, Z. Wang, Y. Liu, A fire extinguishing system based continuously producing vortex ring, China Patent, Application No. 202210678999.X

Awards and Honours

- Early Career Award in Fire Science (2025), International Association of Wildland Fire (IAWF).
- Gold Medal with Congratulations of the Jury (2025), 50th International Exhibition of Inventions Geneva.
- Jack Bono Award for Engineering Communications (2024), Society of Fire Protection Engineers (SFPE).
- Gold Award for project "Smart Firefighting Robot" (2023), China International College Students Innovation Competition.
- "5 Under 35" Award for Top Rising Leaders (2021), Society of Fire Protection Engineers (SFPE).
- Proulx Early Career Award (2020), International Association for Fire Safety Science (IAFSS).
- Fire Engineering Grand Award (2019), Hong Kong Institution of Engineers (HKIE).

Media Coverage

- TVB News, 理大城大學生合力研發智能消防系統助逃生, 28 Dec 2024.
- RTHK "Backchat", Interview about LA Wildfire, 10 Jan 2025.
- NFPA Podcast, The Future of Fire Protection with AI, Jan 2024.
- WEN WEI PO 文匯報, Future Fire Safety Technology (in Chinese), Dec 2023.
- Chinese Scientist, Apply New Technology to Control Fire (in Chinese), March 2023.
- RTHK "The 123 Show", SureFire: change the way that future major fires are dealt with, 29 Dec 2021.
- Channel NewsAsia (CNA) Radio Show, Expert Opinion on the deadly fire accident, 15 Nov 2020.
- Sing Tao Daily, New discovery on the fire ignition process, 31 May 2019.

Case 5: Emerging Materials and Structural Systems for Sustainable Infrastructure

1. Summary of the Impact

As the economy grows, civil structures are getting bigger and more intricate, with increasing exposure to harsh environments. This highlights the urgent need to develop new materials and technologies to create sustainable and resilient infrastructure. The structural engineering teams have conducted ground-breaking research, resulting in improved performance of civil infrastructure through emerging materials, innovative monitoring systems, and intelligent technologies. The research outcomes, including the design theories and software for emerging structural materials and systems, and the performance monitoring and maintenance technologies, have produced significant impacts internationally through adoption into the relevant design codes/guidelines and extensive applications in numerous landmark structures worldwide (e.g., in Brazil, China, and Singapore).

2. Underpinning Research

The following sections summarise, under three headings, the research conducted regarding the choice of materials/systems, design approaches, new analysis methods and maintenance guidance - including considering health monitoring and maintenance strategies:

Emerging structural materials and forms: The structural team was the first to research how new high-performance FRP-steel-concrete structures could be designed and optimized [1]. In addition, the team has pioneered the research area of FRP-reinforced seawater sea-sand concrete structures, aiming to achieve a longer life span and reduced energy consumption for marine infrastructure. Their extensive research on strengthening concrete structures with FRP composites has also led to systematic theories for designing and analysing the behaviour of FRP-strengthened concrete structures [2]. Furthermore, to combat climate change, a new coating was developed by the team for sub-ambient radiative cooling by curbing energy use.

High-performance steel materials and design methodologies: The research team pioneered the research area of high-performance steel structures with significant impacts on the international scientific and engineering communities through the direct adoption of high-strength S690 steel materials in modern structures [3], the innovative design method in design codes/guidelines worldwide [3 & 4], widely utilised design software such as NIDA (Nonlinear Integrated Design and Analysis), and applications to numerous landmark structures in Hong Kong, mainland China and beyond. They have successfully developed an efficient design method for S690 steel by addressing critical design challenges, making the adoption of S690 steel feasible and practical, and offering cost savings of at least HK$ 100 million.

Innovative performance monitoring and maintenance technologies: The research team has conducted real-world applications of monitoring and maintenance on supertall structures (e.g., Canton Tower), long-span bridges (e.g., Tsing Ma Bridge, Hong Kong-Zhuhai-Macao Bridge), and railway for over two decades [5, 6]. The research encompasses three interrelated topics: (1) performance-based design of monitoring systems, including sensors and sensor networks; (2) multi-scale modeling, modal identification, updating, and detection based on real-time data and cutting-edge technologies such as edge computation, computer vision, and deep learning; and (3) loading identification, prognosis, performance assessment. For instance, in collaboration with top-tier universities and enterprises worldwide, the team has developed a proprietary optical Fibre Sensing and Maintenance Technology for infrastructure safety and resilience. The structural engineering research activities cover all stages of high-performance structure, from materials and structural systems selection to analysis, design, and maintenance within the service life.

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4. Impact and Benefits

(i) Emerging structural materials and forms: Design code/standard and real-world application

The team's research on FRP composites in construction has been widely accepted as a source of reliable models/methods. It has thus been adopted in major national design codes/guidelines (China, US, UK, Australia and Germany) for use in structural design worldwide. The theory for the behaviour and design of FRP-strengthened RC structures, including beams and columns, and the fire resistance design method for FRP-strengthened RC structures have been adopted by the second edition of the Chinese standard "Technical Standard for FRP Composites in Construction" (GB 50608 2020) [S1]. The fire resistance design procedure and some design examples have been used to demonstrate the feasibility of using FRP to rehabilitate the Central Market Building of Hong Kong. The new hybrid FRP-concrete-steel double-skin tubular members (DSTMs) (Fig. 1) invented by the team have led to follow-up studies at many universities around the world and have been used in several new arch bridge systems [S2]. In addition, the team's outcomes were adopted in the design guide, which has already been used to update the Canadian code (CSA S16:24) methodology for composite columns, i.e., Clause 18 of CSA S16:24. This design guide is in high demand by practising structural engineers in North America. Furthermore, the team developed a new coating that reduces energy consumption using sub-ambient radiative cooling to combat climate change (Fig. 1(c)). The developed sub-ambient radiative cooling technology can significantly contribute to green and energy-saving buildings, enhanced human comfort, and a cooler urban area.
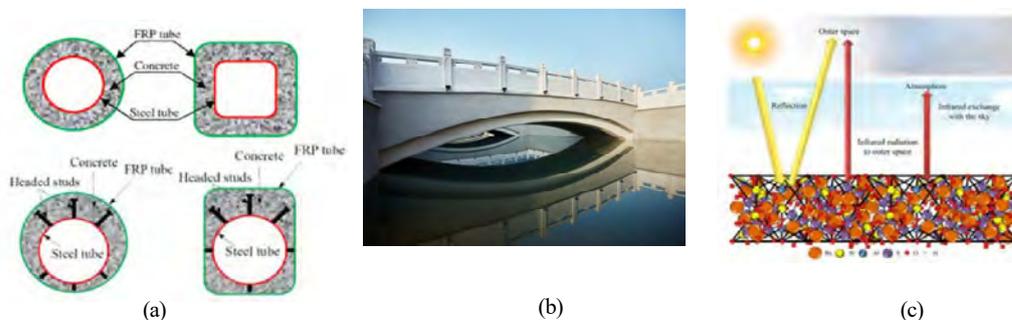

(a) (b) (c)

Figure 1. (a) Cross-sections of FRP-concrete-steel double-skin tubular members (DSTMs), (b) Deck-arch bridge with DSTMs as arch ribs, Anhui Province, China and (c) Schematic cooling mechanism of the geopolymer cooling coating

(ii) High-performance steel materials and design methodologies: S690 application, national codes, and software NIDA

The Chinese National Engineering Research Centre for Steel Construction (Hong Kong Branch), led by CEE members, is the designated research center promoting technological innovations and engineering applications in construction in Hong Kong. Owing to the research and development work in fostering the effective use of Chinese high-strength S690 steel in construction, the team examined a wide range of mechanical properties of both the base plates and their welded sections since 2010. With proper control of the welding processes using a robotic welding system on these 6 to 70-mm thick martensitic steel plates, the team has acquired new understandings and findings on microstructural changes within the heat-affected zones of these steel under the effects of a wide range of welding processes commonly adopted in construction. Any reduction in strength and ductility of these welded sections has been successfully minimized or even eliminated. Extensive experimental and numerical investigations into the structural behaviour of these steel sections and members have been successfully conducted to formulate analyses and design methodology. Hence, the structural benefits of these high-strength steel are fully utilized in the

construction of heavily loaded members in bridges and buildings. An example is the construction of the Double Arch Steel Bridge of the Cross Bay Link in the Tseung Kwan O area of Kowloon, in which a total of 4,400 tons of high-strength S690 steel were used (Fig. 2). The team contributed to the welding and its quality control of the Steel Bridge through a technological transfer consultancy to the main contractor. The team has been appointed by the Development Bureau of the Government of Hong Kong SAR since 2021 as an expert to advise the effective use of high-strength S690 steel in about 20 civil engineering structures and public buildings. Moreover, the work has been successfully incorporated into the latest version of the Code of Practice for the Structural Use of Steel in 2023, published by the Buildings Department of the Government of Hong Kong SAR. Consequently, high-strength S690 steel is readily adopted in all public and private construction projects in Hong Kong. Compared to the traditional steel scheme, the S690 steel scheme offers cost savings of at least HK$ 100 million. Due to their research contributions, CNERC has received awards from the HKIE [S3] and the China Steel Construction Society [S4].

Figure 2. Application of S690 high-strength steel in civil engineering structures

The second-order direct analysis method of design developed by the CEE members provides explicit equations on stability design using section capacity check and with allowance for P-D-d imperfection effects and beam buckling, which are not available in other major national codes. It represents probably the most complete approach to nonlinear analysis applicable to practical design. The method is specified in the Hong Kong Code of Practice for the Structural Uses of Steel (2011) and referenced as Direct Analysis by American Specification for Structural Steel Buildings (ANSI/AISC 360-22); both are widely used in industry. This innovative design method has recently been applied to new steel structural systems with nonsymmetric sections with the method given in ANSI/AISC 360-22 [S5]. Based on the method, the software NIDA was developed by the team and is widely used by universities and consultants in Australia, China, Greece, Hong Kong, Singapore, Taiwan, Ireland, and the UK for practical design, teaching, and research. Advanced computation methods and software have been applied to design numerous steel and composite structures in Hong Kong, mainland China, Singapore, Myanmar, Taiwan, and Macau. Several structures are shown in Figure 3.
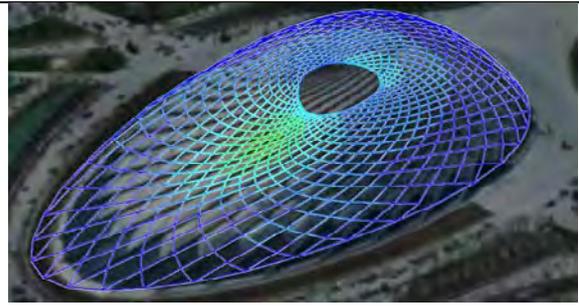

Hong Kong West Kowloon Station

Innocell at Hong Kong Science Park
The first steel MiC Building in Hong Kong

Main Stadium of Kai Tak Sports Park
One of the largest steel structures in HK

Tianjin Yujiabao High-speed Railway Station, China

Figure 3. Some recent landmark structures analysed and designed using NIDA

(iii) Innovative performance monitoring and maintenance technologies: application in numerous landmark structures worldwide

The structural health monitoring and maintenance (SHMM) research team under the CEE is among the first to pioneer the performance monitoring and maintenance of large-scale structures worldwide. Over the past twenty-five years, the team members have carried out in-construction and in-service monitoring of several mega civil engineering structures such as the Hong Kong- Zhuhai-Macao Bridge, 1377 m long main span Tsing Ma Bridge, 600 m tall Canton Tower, etc. Some monitoring systems are illustrated in Fig. 4. The long-span bridges and supertall structures monitored by the SHMM research team set the standard for global structural monitoring and maintenance systems. Apart from being used in civil structures, these innovative technologies have been adopted by the Hong Kong Mass Transit Railway (MTR) system, as well as the High-Speed Train and Metro lines in China, Singapore, and Brazil. These structures define the state-of-the-art SHM system design, multi-scale modeling, system identification, condition assessment and prediction, and intelligent life-cycle maintenance. The team incorporates cutting-edge technologies such as edge computation, computer vision, and deep learning to enhance monitoring and maintenance processes. Their work represents the most extensive and comprehensive approach to ensuring the structural integrity, safety, and resilience of these remarkable constructions. For instance, the monitoring and maintenance system of the Hong Kong-Zhuhai-Macao bridge facilitated the evaluation of the structure's condition during typhoons and earthquakes, ensuring its safety, durability, and resilience throughout its service life. Such technology transfer activities have been recognized by industry and government and adopted in the SHM and maintenance design guidelines, producing profound international impact [S6, S7, &S8].
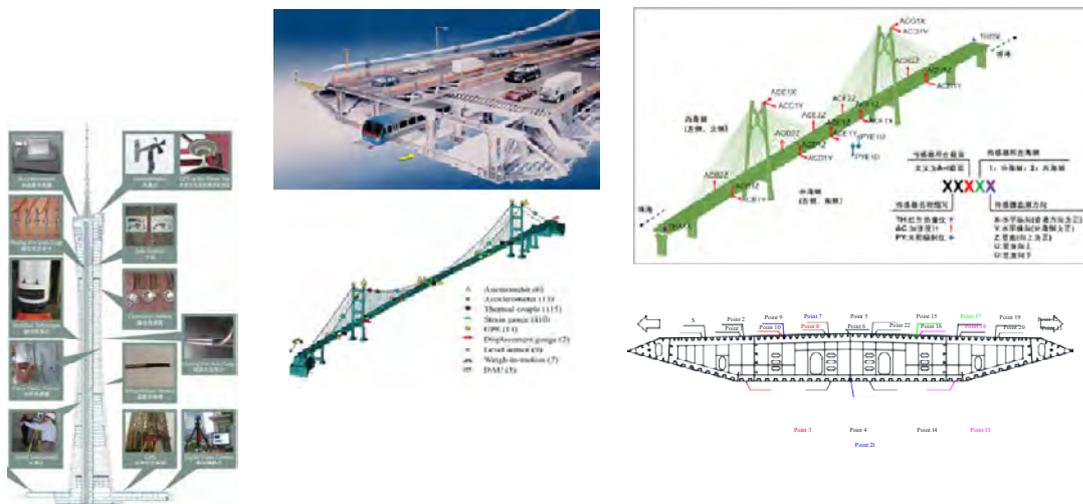
Hong Kong-Zhuhai-Macao Bridge Canton Tower   Tsing Ma Bridge   (Qingzhou Waterway Bridge)

Figure 4. Some performance monitoring and maintenance examples undertaken by the PolyU team

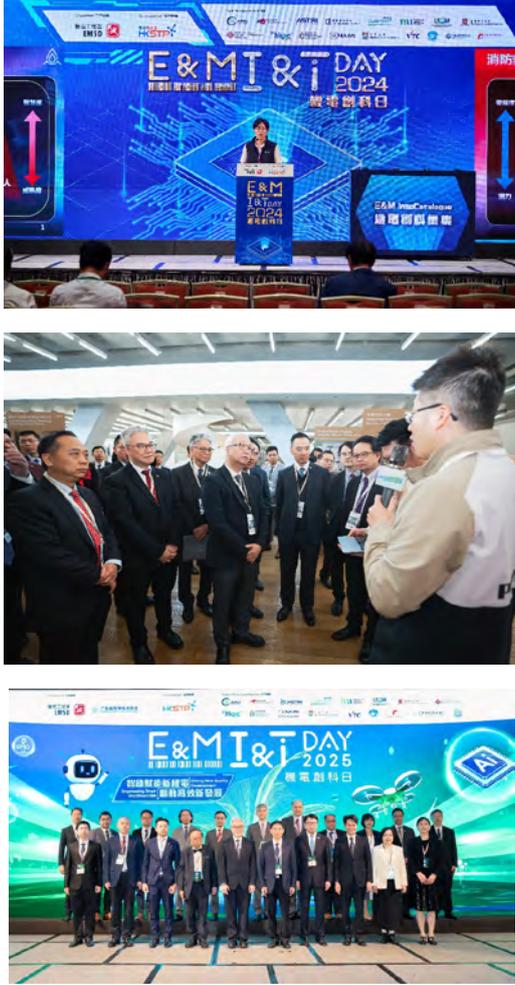**5. References to the Corroboration of Impact and Benefits**

- Evidence of adoption of research work of Prof Jin-Guang Teng and his research team in the Chinese Technical Standard GB50608-2020.

- Evidence of practical applications of research work on hybrid FRP-concrete-steel double skin tubular members by Prof Jin-Guang Teng and his research team.

- The Hong Kong Institution of Engineers "The HKIE Grand Award 2023" Grand Prize on Innovative Application for the research work on "Innovative construction technology and application of high strength S690 steel in construction". China Steel Construction Society "The CSCS Science and Technology Awards 2022" Grand Award for the research work on "Basic Theory, Key Technology and International Application of Chinese High Strength 690MPa Steel Structures".

- Specification for Structural Steel Buildings (ANSI/AISC 360-22), American Institute of Steel Construction, 2022. Appreciation letter from the Hong Kong-Zhuhai-Macao Bridge Authority (on our contribution to monitoring and maintenance of the Hong Kong-Zhuhai-Macao Bridge).
  Letter of evidence from the leading organization of three GBA standards (contribution to the first three GBA standards).

- Collaboration of evidence from Zhejiang Communications Investment Group Co., LTD and Bronze medal metal of the 48th International Exhibition of Inventions of Geneva.

Appendix 3: Awards Won by PolyU Teams / Start-ups

Name of Competition / Award *(by alphabetical order)*	No. of Awards
2024 Silicon Valley International Inventions Festival	9
2025 MUSE Design Awards	1
4th China Mobile Wutong Cup Big Data Innovation Competition - Hong Kong, Macau, and Taiwan Division	1
Asia Pacific Cloud AI Forum & Huawei Developer Competition	1
CES 2025 Innovation Awards	2
China International College Students' Innovation Competition 2024	5
Cornell EMI Pitch Competition	1
Creative Young Entrepreneur Competition (Asia Pacific Region)	1
Creative Young Entrepreneur Competition (Hong Kong Selection)	1
Cyberport University Partnership Programme	2
Forbes 30 under 30 Asia 2025	2
Forbes Asia 100 to Watch 2024	1
Guangdong-Hong Kong-Macao College Students' "Double Hundred Cup" Rural Revitalization Innovation and Entrepreneurship Competition	2
HICOOL Global Entrepreneur Summit and Entrepreneurship Competition	2
Hong Kong ICT Awards 2024	9
Hong Kong Social Entreprise Challenge 2024-25	1
Hong Kong Techathon+ 2025	12
Hong Kong-Zhuhai-Macau University Technology Achievement and Investment Conference Pitching Competition	1
List of 100 Innovative International Technology Transaction Projects, 2025 ZGC Forum	3
Qianhai-Guangdong-Hong Kong-Macao-Taiwan Youth Innovation and Entrepreneurship Competition 2024	2
Start-up Express 2025	1
Suzhou Youth Elite Entrepreneurship Competition	2
The 10th National Youth Science Innovation Experiment and Works Competition	1
The 11th Hong Kong University Student Innovation and Entrepreneurship Competition	20
The 14th "Challenge Cup" National College Students' Entrepreneurship Competition	6
The 2nd City I&T Grand Challenge	6
The 2nd GBA Postdoctoral Innovation and Entrepreneurship Competition	1
The 4th Asia Exhibition of Innovations and Inventions Hong Kong	18
The 50th International Exhibition of Inventions of Geneva	32
Young Techpreneur Project 2024	2
Total	**148**

Appendix 4: Marketing, Networking and Engagement Activities

Date	Event	Photos
Jul 2024	**PolyU Patents Achievement Award Presentation Ceremony** The "PolyU Patents Achievement Award" was launched in appreciation and honour of the remarkable achievements of departments and inventors that actively engaged in intellectual property (IP) filing. This inaugural edition of the award honoured the most active IP filing departments and inventors in the past 5 years and in the year. This highlights the University's collective determination to enhance its innovation culture and protect IP rights. As the esteemed guest-of-honour at the award presentation ceremony, the Director of Intellectual Property, HKSAR, lauded the hard work of all PolyU researchers in filing patents and translating research outcomes into impactful solutions.	
Jul 2024	**Reception for I&T Awards 2024** PolyU was honour to attend the "Reception of I&T Awards 2024" organised by the Innovation and Technology Commission. The Chief Executive officiated at the reception to celebrate the excellent performance of Hong Kong I&T talents in the past year. Ten local scholars and scientists were recognised for bringing glory to Hong Kong with their research achievements. Among them was Ir Prof. Yung Kai Leung who had led the development of crucial space instruments for multiple national space missions. In addition, various award-winning innovations of the 49th International Exhibition of Inventions of Geneva developed by PolyU researchers and start-ups were showcased at the occasion.	

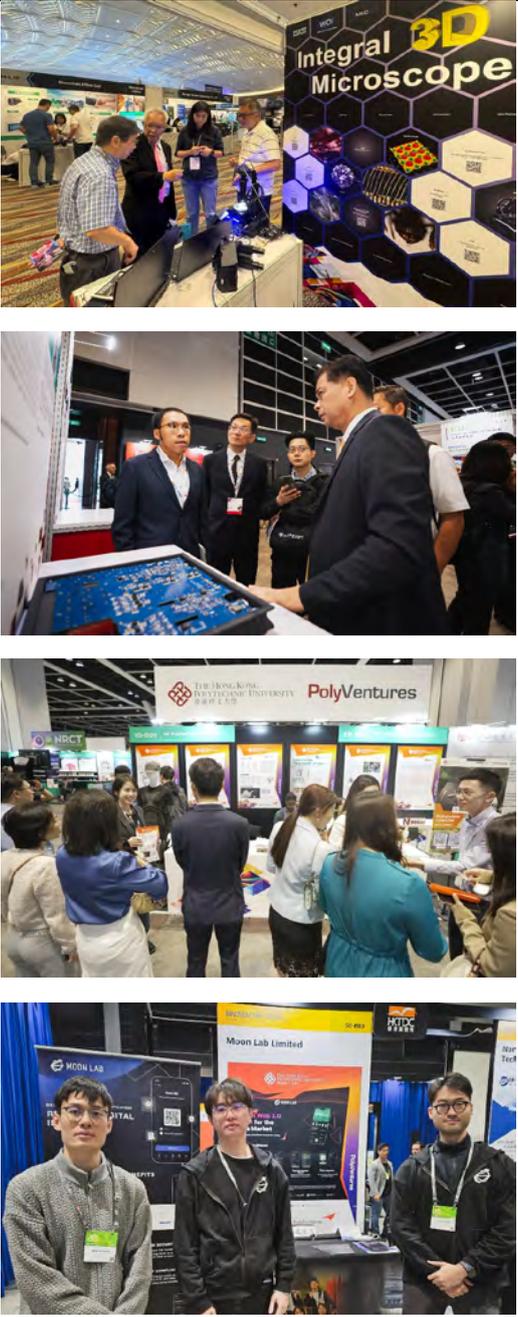| Date	Event	Photos
Jul 2024	**Silicon Valley International Inventions Festival** PolyU research teams garnered nine prestigious awards at the world-renowned third Silicon Valley International Inventions Festival (SVIIF) held in Santa Clara, California, US, including a semi-grand prize, two special prizes, five gold medals and one silver medal. SVIIF provided an invaluable platform for PolyU to connect with investors and business partners, and explore commercialisation and partnership opportunities. PolyU's award-winning projects, in particular the healthcare innovations, successfully captured the attention of visitors from across the globe.	
Jul 2024 – Jun 2025	**Partnership with EMSD** PolyU is in long-term collaboration with the Electrical and Mechanical Services Department (EMSD), HKSAR, to promote innovation and technology (I&T) by showcasing PolyU start-ups at their signature events, including E&M I&T Day 2024, EMSD Symposium 2024, and E&M I&T Day 2025. The collaboration effectively raised awareness of the strengths of these start-ups in providing innovative I&T solutions in the areas of smart firefighting, green cooling for buildings, and AI.	

Date	Event	Photos
Aug 2024	**Global Partnership with ZEISS Vision Care** PolyU signed a licensing agreement and further implemented its global partnership with ZEISS Vision Care, a world market leader of optical lens and ophthalmic instrument manufacturing, to expand the impact and speed up the market penetration of PolyU's proprietary myopia control lens technologies. Both parties further realised their partnership by jointly announcing their latest collaborative initiative in promoting a myopia control spectacle lens that feature PolyU's patented Defocus Incorporated Soft Contact technology, benefitting more myopic children worldwide and accelerating the market presence of PolyU innovations.	
Aug 2024	**HICOOL 2024 Global Entrepreneurship Summit and Entrepreneurship Competition** PolyU researchers and start-ups participated for the first time in the event, showcasing seven groundbreaking research projects that highlight the University's exceptional capabilities in research and knowledge transfer. Two PolyU projects, namely the Quantum Chip-based Key Distribution System and Scolioscan®, the world's first radiation-free 3D ultrasound scoliosis assessment system, bagged the second prize and third prize respectively. As the only tertiary institution in Hong Kong involved in multiple national space missions, the "Surface Sampling and Packing System" developed and manufactured by the PolyU research team was publicly exhibited outside Hong Kong for the first time.	

Date	Event	Photos
Aug 2024 – Feb 2025	**Industry Engagement via CEO Club** To promote the translation of PolyU research into impact through knowledge transfer and commercialisation, the **CEO PolyVentures Series** of seminars provided an excellent platform for in-depth exchange between PolyU start-ups and our industry partners. The speakers from PolyU start-ups presented their innovations in topics such as low-altitude economy, healthy foods, and AI-empowered chatbots to the audience from different industries, while the greatly inspired audience actively explored collaboration opportunities with the speakers. The club also organised an inspiring exchange visit to the headquarters of Huawei in Dongguan and Meituan in Shenzhen to deepen mutual understanding and explore future collaborations.	
Sept 2024	**PolyU and Fuzhou University signed MoU to enhance education and research collaboration** A delegation led by Prof. WU Minghong, President of Fuzhou University, member of the Chinese Academy of Engineering, visited PolyU on 19 September to exchange views on strengthening cooperation between the two universities in education and research.	

Date	Event	Photos
Sep 2024	**BIOHK2024 and Partnership with Suzhou Kowloon Hospital** PolyU participated in BIOHK2024 by showcasing nine PolyU start-ups and their novel technologies and solutions in the areas of biotechnology and healthcare. The University also inked a strategic collaboration agreement with Suzhou Kowloon Hospital, a subsidiary of the Hong Kong Kowloon Group. Under the collaboration, the two partners will establish a joint innovation and incubation platform to promote the translation and application of medical technology research outcomes, further propelling medicine-engineering integration. After the agreement signing ceremony, PolyU staged a panel discussion to explore the challenges faced by the healthcare industry and industry development driven by inter-institutional collaboration, engaging PolyU scholars and representatives from leading medical enterprises, including Suzhou Kowloon Hospital.	
Sep 2024	**Partnership with Sunwah Innovations** PolyU and Sunwah Innovations signed an MoU to strengthen their collaboration in the fields of education, innovation, technology transfer, and entrepreneurship within the Greater Bay Area, Vietnam, and Southeast Asia. The collaboration will focus on facilitating international academic exchanges, joint conferences, and entrepreneurship and innovation projects. The partners will jointly organise activities to promote technology development, with emphasis on artificial intelligence and sustainable innovation. They will also promote start-up exchange programmes across Hong Kong, the Greater Bay Area, and Southeast Asia, providing training and networking opportunities.	

Date	Event	Photos
Oct 2024	**PolyU InnoTech Open Day 2024** Under the theme "Vision through Innovation, Connecting Intelligence", this flagship event showcased PolyU's achievements in interdisciplinary research, knowledge transfer and entrepreneurship. Through a variety of dynamic activities such as seminars, forums, exhibitions, demos and laboratory tours, it manifested how PolyU contribute to the development of Hong Kong into an international I&T hub. Its innovation showcases highlighted the power of PolyU-industry collaboration in driving cutting-edge innovation. To further drive entrepreneurship development, PolyU entered into strategic partnerships with companies and organisations from Hong Kong and Mainland China at the event. Our outstanding alumnus Dr Shen Peng, founder and CEO of Waterdrop Inc., shared his entrepreneurial journey, providing valuable insights for aspiring entrepreneurs. The **PolyVentures Showcase** included start-up pitching, a fireside chat, and an enlightening exhibition featuring incubation/investment platforms in Mainland China and 18 start-ups nurtured in the **PolyVentures** ecosystem. Post-event publicity efforts, including a three-episode series in a local newspaper, were made to further promote the University's accomplishments in propelling innovation and entrepreneurship development.	
Oct 2024	**Visit by the Department of Science and Technology of Hunan Province delegation** A delegation from the Department of Science and Technology of Hunan Province delegation visited PolyU for exchange meeting on October 11. Prof. Wang Zuankai, Associate Vice President (Research and Innovation), and Prof. Yi-Qing NI, Chair Professor of Smart Structures and Rail Transit in the Department of Civil and Environmental Engineering welcomed the delegation.	

Date	Event	Photos
Oct 2024	**InnoCarnival 2024** At the nine-day InnoCarnival this year, the PolyU pavilion showcased the innovations of nine PolyU research teams and start-ups, spanning the fields of healthcare devices, advanced materials, the artificial intelligence of things (AIoT), sensing technology and space research. Visitors from all walks of life gained a better understanding of the contribution made by the PolyU community in advancing the socioeconomic development in Hong Kong. Post-event publicity efforts were made to further raise awareness of the University's achievements in this area.	

Date	Event	Photos
Oct 2024 – May 2025	**Tradeshows and Exhibitions** Over 20 PolyU research and start-up teams together with their innovations were showcased at Hong Kong Electronics Fair (Autumn Edition 2024 and Spring Edition 2025), Entrepreneurship Day, Business of IP Asia Forum (BIP Asia), the InnoVenture Salon at the Asian Financial Forum (AFF) 2025, ASTRI Tech Applied Summit and Technovation Week, InnoEX, as well as Hong Kong International Medical and Healthcare Fair. An extensive range of technological domains were covered, which include medical and healthcare, green and sustainable technology, vision health, AI, robotics, fabric sensors, electronics, firefighting, emergency management, fintech, etc. These promising teams presented their innovations and technologies to visitors from industry and the general public, and attracted attention from visitors from various sectors.	

Date	Event	Photos
Nov 2024	**26th China Hi-Tech Fair** In this prestigious trade show, PolyU showcased a number of research projects and innovations developed by PolyU research teams and start-ups, and featured "The Hong Kong Polytechnic University-Qianhai Disruptive Technology and Innovation Research Centre", a collaboration between PolyU and Qianhai Authority. The innovations covered a wide range of areas, such as healthcare, vision care, robotics, advanced manufacturing, sensing technology, digital colour management, and quantum computing. At the China Hi-Tech Forum, Prof. CHAN Ching-chuen delivered a keynote speech on how to create and boost new quality productive forces by harnessing AI.	
Nov 2024	**Aerospace Innovation Research Summit (AIR Summit)** Held on PolyU campus, the AIR Summit brought together leading experts, researchers, and industry professionals in the field of aerospace technology and innovation for collaborative discussions and knowledge exchange. During the event, PolyU signed an MoU with Orion Astropreneur Space Academy (Hong Kong) Limited (OASA) to establish the first space accelerator in Hong Kong that will nurture talent for the NewSpace Economy and related industries. The University also staged a forum session that discussed how start-ups can seize the opportunities arising from the space economy, translating their innovations into practical impact in the global market.	

Date	Event	Photos
Dec 2024	**4th Asia Exhibition of Innovations and Inventions Hong Kong (AEII)** Jointly organised by the Hong Kong Exporters' Association and Palexpo Geneva, AEII is an annual exhibition cum competition devoted to innovations and inventions of Asia. In this year's AEII, the PolyU research and start-up teams won a total of 18 awards, including the most coveted Grand Prize and a Special Prize. The ground-breaking technologies demonstrated the long-lasting, real-world impact brought by the PolyU community's inventions and innovations.	
Dec 2024	**Guangdong-Hong Kong-Macao Greater Bay Area Intellectual Property Trade Expo and International Geographical Indications Products Trade Expo" (IP EXPO and GI EXPO)** The University participated in the IP EXPO and GI EXPO by showcasing a number of PolyU start-ups and research projects, spanning areas of medical and healthcare technology, green energy, construction, clothing and textiles, electronics, and advanced manufacturing. The PolyU delegation met with Mr GAO Guosheng, Member of Party Committee of the Guangdong Administration for Market Regulation (Guangdong Intellectual Property Administration), Party Committee Secretary and Director General of the Guangdong Intellectual Property Protection Center; as well as representatives from Guangdong University of Technology to deepen mutual understanding and strengthen collaboration in research and start-up development in the Greater Bay Area.	

Date	Event	Photos
Dec 2024	**PolyU signs MoU with Southern Medical University to advance medical development and cultivate research talent** PolyU and Southern Medical University signed a Memorandum of Understanding (MoU) on 10 December, joining forces on advancing medical development through innovative research and nurturing medical talent, contributing to the global medical industry, human health and well-being.	
Dec 2024	**Visit by the Sichuan Provincial Department of Transport delegation** A delegation from the Sichuan Provincial Department of Transportation visited PolyU on 20 December for an industry-academia-research exchange meeting.	
Jan 2025	**Consumer Electronics Show (CES) 2025** PolyU participated in the world-renowned CES 2025, held in Las Vegas, US, and showcased ten PolyU start-ups and their groundbreaking innovations in healthcare, smart cities, AI, and Internet of things (IoT) sensing. As the only university representative from Hong Kong, PolyU's participation manifested its commitment to translating cutting-edge research into impactful social solutions. Two of the innovations from PolyU start-ups garnered the CES 2025 Innovation Award in the Accessibility and AgeTech category.	

Date	Event	Photos
Jan 2025	**Partnership with Cyberport** PolyU and Cyberport established a strategic partnership to jointly cultivate a vibrant ecosystem that nurtures entrepreneurs and start-ups, and further fosters industry-academia-research collaboration, contributing to Hong Kong's development into a global I&T hub. A series of collaborative initiatives between PolyU and Cyberport were introduced, including plans to partner with leading accelerators to co-develop acceleration programmes to support start-ups in fundraising and product development. The first programme will focus on AI and Web 3.0.	
Feb 2025	**PolyVentures Awards Presentation cum PolyU International Future Challenge Kick-off Ceremony** PolyU hosted the event to celebrate the University's achievements in entrepreneurial development and the spirit of collaboration, honouring over 100 teams and startups that have received support from various PolyU and government funding schemes, as well as the latest cohort of postdocs of the Translational Startup Postdoc Programme. The event also officially inaugurated the PolyU International Future Challenge, a flagship innovation and entrepreneurship competition that features a Hong Kong main track and multi-regional tracks across Mainland cities and regions. The PolyU InnoHub@BHIC, a collaboration with Shougang Holding (Hong Kong) Limited, was also unveiled during the event, marking an important step in the University's initiative to expand the PolyU InnoHub network. A concurrent exhibition was held to showcase 23 outstanding PolyU startups and their products or services, demonstrating their remarkable strengths and accomplishments in addressing global challenges with ground-breaking solutions.	

Date	Event	Photos
Feb 2025	**Visit by Shunde District** A delegation from Shunde District visited PolyU on 24 February to engage in industry-academia-research exchanges. Talent education and recruitment ideas were exchanged.	
Mar 2025	**Visit by Guangzhou-Qingyuan delegation** A Guangzhou–Qingyuan delegation visited PolyU on 20 March for industry-academia- exchanges and experience sharing. Inpired by PolyU innovation in fashion, the team exchange collaboration ideas and invitation to participate in the fashion events around.	
Mar 2025	**Ongoing Partnership with the Construction Industry Council (CIC)** PolyU and the Construction Industry Council (CIC) announced their ongoing partnership to safeguard workers' health and safety in hot and humid conditions through the adoption of the Anti-Heat Stress Uniforms (AHSU) developed by a PolyU research team. Featuring advanced fabrics and nano-materials for superior moisture management, along with retro-reflective strips for enhanced safety, AHSU is widely adopted across the industry and has set new standards for industry uniforms, with over 116,000 shirts and 36,000 trousers sold.	

Date	Event	Photos
Apr 2025	**50th International Exhibition of Inventions Geneva** PolyU won a total of 38 accolades, including two Special Prizes and a record high of ten Gold Medals with Congratulations of the Jury at this year's expo, a widely recognised annual event devoted exclusively to invention. This remarkable achievement highlights the University's strong research capabilities and commitment to innovation on the global stage. Thirty-three PolyU innovations seized 36 accolades, including 2 Special Prizes, 10 Gold Medals with Congratulations of the Jury, 8 Gold Medals, 11 Silver Medals, 4 Bronze Medals and 1 Special Merit Award. Among them, 2 were developed by the Centre for Eye and Vision Research, a partnership between PolyU and the University of Waterloo. Reflecting PolyU's long-standing commitment to industry collaboration, two projects co-developed with MTR Corporation and The Hong Kong Research Institute of Textiles and Apparel (HKRITA) respectively were also granted awards.	
Apr 2025	**PolyU and Shaoxing government host global innovation and entrepreneurship contest to foster tech talent and innovation transfer** The 10th Global Innovation and Entrepreneurship Contest of High-Level Talents, Shaoxing 2025 (Hong Kong Division Competition) was held at PolyU on 22 April. Following the event, the Keqiao Campus Job Fair for High-level Talents was held, attracting a diverse array of enterprises from high-tech. The final session featured an exchange conference.	

Date	Event	Photos
Apr 2025	**GITEX Asia 2025** The University joined GITEX ASIA 2025 held in Singapore as the only university from Hong Kong, showcasing 10 PolyU start-ups along with their latest innovative and impactful solutions. In addition, PolyU co-organised the "Singapore x Hong Kong Innovation Mixer" with Hong Kong Science & Technology Parks Corporation, ACE.SG, the Hong Kong Economic and Trade Office in Singapore, and the Hong Kong Singapore Business Association, to strengthen cross-border partnerships between Hong Kong and Singapore's entrepreneurial ecosystems. The event brought together over 100 participants— including start-ups, entrepreneurs, investors, and government leaders, providing an exchange platform for identifying opportunities for scaling into global markets. One participating PolyU start-up, has begun collaborating with the National University of Singapore and will help protect Singapore's valuable natural heritage with advanced tree health monitoring technology. Post-event promotion in a local newspaper helped to reinforce PolyU's entrepreneurial achievements demonstrated in GITEX Asia.	
Jun 2025	**London Tech Week** PolyU took part in the world-renowned event held in London, UK, as the only participating university from Hong Kong, through exhibition and sharing insights about knowledge transfer and entrepreneurship development at the panel discussion. Four PolyU start-ups showcased their cutting-edge innovations in AI, advanced manufacturing technologies and healthcare solutions. Prof. Christopher CHAO, PolyU Vice President (Research and Innovation), shared his insights into knowledge transfer, the nurturing of university spinouts, and the support and resources available to PolyU start-ups at the event's panel discussion. The event attracted business leaders, industry experts and investors from around the world, providing the PolyU startups with valuable opportunities to explore potential collaborations and establish partnerships. The PolyU delegation also attended the drinks reception hosted by InvestHK and Hong Kong Economic and Trade Office (London), enabling high-level networking and discussions about business partnerships.	

Date	Event	Photos
Jun 2025	**Times Higher Education (THE) Global Sustainable Development Congress (GSDC)** PolyU participated in GSDC the Times Higher Education (THE) Global Sustainable Development Congress held in Istanbul, Turkey, as the regional co-host. The event convened 3,500 delegates from 110 countries and 1,200 institutions and organisations to discuss higher education's role in driving new alliances and creating positive action for a sustainable future. Members of the PolyU delegation shared their insights as well as the University's achievements at various panel discussions and forums of the event. PolyU also showcased its research achievements in deep space exploration, sustainable manufacturing, new materials and new energy, and optometry—highlighting PolyU's role in translating research breakthroughs into innovative, practical solutions and fostering interdisciplinary collaborations that contribute to the advancement of the world.	