

10 REDUCED INEQUALITIES



Transforming Hand Mobility with AI-Powered Prosthetics

The Research Institute for Smart Ageing under the PolyU Academy for Interdisciplinary Research, has developed ProRuka, a groundbreaking prosthetic hand designed to transform the lives of amputees through intuitive and precise control. Unlike conventional prosthetics, ProRuka is powered by stump muscle signals collected via wireless wearable ultrasound imaging, a technique known as sonomyography. These signals are processed by advanced AI algorithms in real time, enabling the device to decode natural control mechanisms of the human hand. Moreover, the system can not only recognise specific gestures but also determine the degree of action, allowing for highly accurate and responsive hand movements.

The prosthetic hand is 3D-printed, lightweight, and cost-effective, with a mechanical design that mirrors the natural proportions of the human hand. Its independent finger movement and ability to interpret complex gestures make it more functional than existing prosthetics. By enhancing comfort and

Research & Innovation

usability, ProRuka significantly improves user acceptance, enabling amputees to regain independence, confidence, and quality of life. The innovation has earned international recognition, including the **Gold Medal with Congratulations of the Jury and a Special Award from the Taiwan Invention Association at the 49th International Exhibition of Inventions Geneva**, as well as the **Gold Medal at the 4th Asia Exhibition of Innovations and Inventions Hong Kong**.



Revolutionising Mobility for the Visually Impaired through Augmented Reality

Vision loss is an escalating global concern, particularly with the ageing population, and adaptive technologies are crucial to empower functional performance and maintain quality of life. In response, researchers from PolyU and the University of Waterloo co-founded the Centre for Eye and Vision Research and have developed ObstAR, an augmented reality (AR) device that revolutionises navigation for visually impaired individuals. The device integrates advanced Red, Green, Blue, and depth camera systems with innovative algorithms for real-time obstacle detection, image segmentation, and information fusion, enabling precise recognition of environmental hazards such as traffic lights, zebra crossings, sharp turns, and large banners.

Having received the **Gold Medal with Congratulations of the Jury at the 49th International Exhibition of Inventions Geneva** and the **Gold Medal at the 3rd Asia Exhibition of Innovations and Inventions Hong Kong**, ObstAR provides personalised guidance through visual and auditory outputs, allowing users to navigate familiar and unfamiliar routes safely and independently. By combining AI-driven obstacle recognition with AR feedback, the system minimises reliance on traditional assistive tools like canes or human assistance, enhancing mobility freedom and social inclusion. Such a technology exemplifies the transformative potential of research-driven innovation, improving the independence, confidence, and quality of life of visually impaired individuals while advancing assistive technology for global health and accessibility.

Teaching & Learning

Advocating Inclusive Design and Adaptive Fashion

In collaboration with the Service-Learning and Leadership Office and 1Step Association, the School of Fashion and Textiles ran an impactful service-learning subject focusing on inclusive design, which aimed to equip students with knowledge and skills in adaptive clothing and accessory design, while fostering deep empathy and an acute awareness of community needs.

Students from diverse academic fields and disciplines worked closely with wheelchair users from 1Step Association, engaging in co-creation to produce customised apparel and accessories that enhance daily comfort and mobility. The collaborative process not only addressed practical challenges but also helped build inner confidence

among PolyU students and service recipients. It also offered students hands-on experience in inclusive design while enhancing their teamwork and communication capabilities.

Moreover, a photography exhibition entitled “Empowered Mobility: Inclusive Apparel and Product Designs for Wheelchair Users” was held to demonstrate how thoughtfully designed clothing can serve as a tool of care, dignity, and empowerment. Through this project, students gained a deeper understanding of the lived experiences of people with physical disabilities. Importantly, it encouraged future professionals to carry forward the values of inclusivity and user-centred thinking in their respective disciplines.



Redefining Fashion with Inclusive Artistic Expression

As part of a transformative offshore service-learning initiative, PolyU students travelled to Da Nang, Vietnam to engage in a collaborative project with **around ten persons with disabilities (PWDs)** and ten local university students. This service-learning subject, “Community Engagement through Expressive Textile Arts and Fashion”, co-organised by PolyU’s School of Fashion and Textiles and the Service-Learning and Leadership Office, Danang Architecture University, and an NGO in Vietnam, the Centre of Research and Community Inclusive Support, aimed to reduce stigma and boost self-confidence among PWDs through co-creation and creative expression.

In this project, participants co-designed expressive textile artworks and fashion prototypes, which were showcased at a public fashion show in Da Nang, promoting inclusion and dignity and making voices heard through heartfelt life stories. Beyond technical skills, the project fostered empathy, teamwork, and cultural exchange. Moreover, students learned to tailor fashion to diverse needs, while participants expressed their individuality and sense of identity. The experience also deepened mutual understanding and highlighted the power of art and design as tools for social change. All in all, this initiative not only empowered the individuals involved but also contributed to raising awareness of inclusivity and equality within the broader community.

External Engagement

Empowering Migrant Domestic Workers through Language Education and Public Dialogue

In an effort to empower migrant domestic workers and raise their quality of life, the Department of English and Communication has joined hands with the Indonesian Migrant Workers Union to offer the “English Training Programme for Migrant Workers”. Designed to enhance English language proficiency, the Programme has so far offered **over 120 linguistically diverse domestic workers** an immersive and hands-on learning experience, enabling them to acquire enhanced skills in

English language vocabulary, speaking, listening, and writing. The Programme aims to help them establish a better relationship with their employers and the local community and, importantly, to advocate for themselves. PolyU will continue to offer this programme to meet growing demand and to create a positive impact on the migrant community.

Concurrently, the Department co-organised the Migrant Worker Lives Matter Symposium with two local migrant worker NGOs, PathFinders and Mission for Migrant Workers, to address systemic issues faced by migrant domestic workers and explore ways for Hong Kong to

become a more inclusive society. **Around 140 participants**, including academics, policymakers, NGOs, migrant workers and their employers, came together and engaged in discussions on topics such as domestic work as a caring profession, migrant health, and employer–employee relationships. The Symposium called for ethical recruitment, better healthcare access, clearer rights information, and improved communication, thereby helping ensure the well-being, dignity, and inclusion of migrant domestic workers in Hong Kong.



English Training Programme for Migrant Workers



Migrant Worker Lives Matter Symposium

Fostering a Dementia-Friendly Society through Training and Education

With a view to fostering a dementia-friendly community in Hong Kong, the PolyU Jockey Club Design Institute for Social Innovation has introduced two initiatives to engage key stakeholders in specialist training and public education.

Working with the Hong Kong Institute of Certified Property Managers, the vocational training course “Property Management Service Training – Elderly

(Dementia) Care Support Skills” was developed to fill a market gap by integrating dementia awareness into property management training. The course focused on dementia basics, estate management practices, and community building to equip industry practitioners with the knowledge and skills necessary to provide targeted assistance to elderly residents in a professional and supportive manner. The pilot attracted **over 50 trainees** and has since been recognised by the Property Management Services Authority as a core component in its Continuing Professional Development Scheme.

In addition, co-organised with a local NGO, Yan Oi Tong, the Dementia-Friendly Gamified Public Education project used a simulation game toolkit to raise public awareness and establish empathy. Workshops were held to engage participants from diverse backgrounds, including teenagers and carers, to test and refine the toolkit. In the next project phase, the initiative will be taken to schools and frontline service providers, with the aim of reducing stigma towards individuals with dementia and promoting inclusive practices through experiential and game-based learning.



Property Management Service Training – Elderly (Dementia) Care Support Skills

Dementia-Friendly Gamified Public Education

Governance & Operations

Strengthening Staff Readiness for Inclusive Student Support

The University supports students with special educational needs (SEN) and enhances workplace inclusion through a range of targeted initiatives. To strengthen campus employment opportunities, the Student Affairs Office (SAO) developed two key resources: the “Employers’ Toolkit: Employing Talent with Diverse Needs” and a companion guidebook offering practical advice on workplace communication with individuals with disabilities. Both resources aim to equip staff members with the knowledge and tools to create more inclusive work environments, particularly for PolyU students with SEN.

As part of a broader effort to enhance inclusion, the Careers and Placement Section of SAO hosted a workshop entitled “Creating Inclusive Workplaces: Supporting Students with Diverse Needs in Work-Integrated Education (WIE)”. The session provided PolyU staff involved in WIE administration with practical strategies, case-based learning, and ethical guidance on supporting students with learning disabilities, mental health conditions, and other diverse needs before, during, and after work placement. These initiatives strengthen PolyU’s institutional capacity to foster workplace equity, promote disability inclusion, and better prepare all students for meaningful participation in a workplace that champions diversity, equity, and inclusion.



Companion guidebook on workplace communication with individuals with disabilities



Cultural Night Series

Promoting Unity through Global Cultural Showcase

PolyU celebrates its rich cultural diversity through vibrant events that unite the campus community and foster mutual understanding. The inaugural International Cultural Festival spanned multiple days, showcasing a dynamic array of global traditions. Attendees enjoyed live performances, cultural workshops, food appreciation sessions, film screenings, and craft demonstrations. Drawing **over 6,000 participants**, including around 40 distinguished guests from various Consulates-General, this inclusive festival deepens appreciation for cultural diversity and promotes cross-cultural dialogue.

Alongside this flagship event, the Cultural Night Series featured celebrations hosted by student associations representing South Asia, Malaysia, Indonesia, Kazakhstan, and beyond. These evenings provided participants with immersive experiences through performances, traditional cuisine, and interactive activities. Held at the Global Student Hub, the series encourages multicultural unity by establishing connections between local and non-local students.

Overall, these initiatives enrich campus life by celebrating diversity, promoting inclusiveness, and inspiring students to broaden their perspectives through cultural exchange and shared experiences, and ultimately cultivate a welcoming and vibrant community where everyone can appreciate the rich cultural tapestry worldwide.



International Cultural Festival