THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

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Junior Researcher Mentoring Programme 2023

Code:	JRMP2023_50
School / Department:	School of Fashion and Textiles
Name of Research Team Member(s):	Dr Joanne Yip, Associate Dean and Associate Professor
Research Topic:	AI-assisted Personal Training Gear to Monitor and Enhance Exercise Performance
Short Description of the Research Project:	Technologies are influencing how we exercise. More and more people choose to exercise wisely using wearables with accelerometers or pressure sensors to monitor exercise performance such as running, biking, and swimming. However, current wearable technologies do not satisfy the needs of more demanding exercises, such as resistance training, where correct poses and the use of muscles are more important in training efficiency and safety than exercising speed. Our personal training system consists of software and a set of tight-fit, breathable, and sweat-wicking activewear (top and pants) with 16 wearable sensors to collect synchronised measurements to monitor muscle activity and body motion during exercise. Users can view their exercise performance through more comprehensive descriptions, such as repetition counts, muscle activation and fatigue levels. Our patented artificial intelligence (AI) technologies in pose recognition can differentiate and quantify pose abnormality of seven common exercises including biceps curl, triceps extension, chest press, sit-ups, Russian twists, lunges, and plank using a single camera. Hence, allowing timely reminders to be given

	to users to improve their poses and avoid misuse of muscles. Our innovation is ideal for personal trainers and fitness enthusiasts to outline training programs, hence maximising training efficiency, and reducing the risk of injuries.
No. of Places Offered:	5
Frequency of Meetings:	Bi-weekly
Special Requirement(s):	Students should be interested in sports, AI, or fashion design.

* The information presented above is subject to change.