

## PolyU Projects funded under NSFC/RGC Collaborative Research Scheme 2023/24

Information Technology	
Project Title	Efficient Scheduling of Integrated Cloud-edge-end Computing Power for AI-enabled Applications
Hong Kong Project Coordinator	Prof. Jiannong Cao Dean of Graduate School, Otto Poon Charitable Foundation Professor in Data Science, Chair Professor of Distributed and Mobile Computing Department of Computing
Project Description	This project proposes a systematic framework for cloud-edge-end-integrated computing power management and scheduling to support resource-intensive and latency-sensitive AI-empowered applications, such as VR/AR, autonomous vehicles and industrial IoT. A prototype system with an example of novel XR streaming will be developed to demonstrate the practical impact. The framework is expected to address current challenges faced by emerging advanced applications, including large-scale task network, heterogeneous computing power measurement, resource heterogeneity, large-scale task scheduling, diversity and complexity of AI models, benefitting a wide range of applications, as well as contributing to the construction of a national computing power network.
Mainland Project Coordinator	Prof. Kun Xie Hunan University

Management Science	
Project Title	The Mechanism and Policy Optimisation of Multi-stakeholder Cross-regional Collaboration in the Construction Industry of the GBA
Hong Kong Project Coordinator	Prof. Geoffrey Q.P. Shen Associate Vice President (Global Partnerships) Chair Professor of Construction Management Department of Building and Real Estate
Project Description	The project aims to explore the basic rules and mechanisms for selecting cooperation modes for cross-regional cooperation in the construction industry in the Greater Bay Area, and to reveal multi-stakeholder cross-regional cooperation mechanisms in the construction industry under the context of "one country, two systems" and "three places, three jurisdictions", to provide scientific basis for optimizing cross-regional cooperation in construction and promoting the flow of production factors.
Mainland Project Coordinator	Prof. Dongping Fang Tsinghua University

Marine & Environmental Science	
--------------------------------	--

Project Title	Develop Next-generation Typhoon-resistant Deep-sea Offshore Floating Hybrid Wind-wave Energy Converters: from Coupling Load Mechanism to Vibration Mitigation Technology
Hong Kong Project Coordinator	Prof. Songye Zhu Associate Head (Research) and Professor Department of Civil and Environmental Engineering
Project Description	Floating hybrid offshore wind-wave energy converters (HOWWECs) integrate two energy conversion units with different operating modes and dynamics to constitute a new highly-complex system. To guarantee its survivability during super-typhoon events remains a challenging task. This project aims to conduct systematic investigations on various aspects, including multi-physics and multi-scale loading variations in a warming climate, nonlinear coupling dynamics and simulations, power performance under operational conditions, failure mechanisms during super typhoons and effective protection technologies. The outcome of this research will be a significant step towards the development of typhoon-resistant floating HOWWECs, which hold immense potential along China's extensive coastline.
Mainland Project Coordinator	Prof Shitang Ke Nanjing University of Aeronautics and Astronautics

### PolyU Projects funded under NSFC/RGC Joint Research Scheme 2023/24

Research Field	Project Title	Hong Kong Principal Investigator	Mainland Principal Investigator	Amount Awarded by RGC (HK\$)
Life Science	Novel SNARE Complexes for Autophagosome-lysosome Fusion: Mechanistic Study and Strategy for Modulation	Prof. Yanxiang Zhao Associate Head Department of Applied Biology and Chemical Technology	Prof. Rong Liu China Agricultural University	1,219,537
New Materials Science	A New Paradigm for Designing and Manufacturing of 4D Printed Reconfigurable Lattice Structures for Tunable Broadband Vibration Suppression	Prof. Li Cheng Associate Dean (Research) Faculty of Engineering Chair Professor of Mechanical Engineering Department of Mechanical Engineering	Prof. Han Meng Nanjing University of Aeronautics and Astronautics	1,210,654
	Mastering the Synergy Between High-voltage Cathode and Electrolyte to Build Robust Interfaces for Advanced Potassium-ion Battery	Dr Biao Zhang Associate Professor Department of Applied Physics	Dr Dengyun Zhai Tsinghua Shenzhen International Graduate School Tsinghua University	1,143,736
Others	Recycling Construction Waste in Highway Embankments towards Sustainable Development of City Clusters: Geotechnical Assessment Considering Multi-physics Coupling Effects	Dr Chao Zhou Tsui Tack Kong Young Scholar in Civil Engineering Associate Professor Department of Civil and Environmental Engineering	Prof. Jun-hui Zhang Changsha University of Science & Technology	1,233,750