

# WANG XIANGZHI, ERIC

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## EXCLUSIVE SUMMARY

Eric Wang Xiangzhi is a master's graduate in Information Engineering at The Chinese University of Hong Kong with expertise in developing innovative systems and solving complex technical problems. He has a proven track record in research and development, supported by publications in leading journals and conferences. Skilled in advanced programming, data analysis, and system design, Eric thrives in fast-paced environments that require adaptability and strategic thinking.

## EDUCATION BACKGROUND

**The Chinese University of Hong Kong** 08/2023 – 10/2024

*MSc in Information Engineering*

**GPA: 3.58/4.0**

**Coursework:** Data Science in Practice; IT Innovation & Entrepreneurship; Blockchain & Applications; Web Programming & Internet Security, etc.

**The Hong Kong Polytechnic University**

09/2019 - 07/2023

*BSc (HONS) in Computing*

**GPA: 3.33/4.3**

**Coursework:** Data Mining & Warehousing; Machine Learning; Aspects & Ethics in Computing; Computer Vision; Software Engineering; Business Intelligence & Customer Relationship Management; Design & Analysis of Algorithms, etc.

**Honors and Scholarships:** Excellent Presentation in Best Project Award Competition 2023; Dean's Honor List 2022; InfoTech Job Market Driven Scholarship 2023, 12000HKD; Greater Bay Area Virtual Internship Programme, 5000HKD; Undergraduate Research and Innovation Scheme (PolyU), 14000HKD.

## TECHNICAL SKILLS

**Programming Languages:** Python, C#, (CUDA) C++, Web Full-stack

**Data Analysis, Machine Learning, and AI Engineering:** PyTorch, Pandas, OpenCV, etc.; LLM system integration and prompt engineering, Stable Diffusion model customization (e.g., part replacement, denoising flow manipulation)

**Game, Rendering, and Modelling:** Unity (3D & VR), Blender, MeshLab

**Software Engineering:** requirement analysis, prototype and MVP development, documentation

**Soft Skills:** solution proposal, methodology design, teamwork and communication, schedule management

## WORKING EXPERIENCE

**Research Assistant, Department of Computing, The Hong Kong Polytechnic University**

09/2023 - 10/2024

**Research Associate**

11/2024 - Present

- ✧ **Research & Development:** Engaged in advancing machine learning-based rendering techniques and human-computer interactions within immersive environments. Designed and implemented innovative methodologies, created datasets, conducted comprehensive data analyses and executed extensive experiments and user studies. Authored and co-authored papers aimed at contributing to the field.
- ✧ **Collaboration & Communication:** Collaborated closely with supervisors and team members across different groups. Regularly reported progress in team meetings and coordinated communication with participants for user studies
- ✧ **Technical Expertise:** Specialized in software development using Python (PyTorch), C++ (CUDA), and Unity. Employed 3D modeling tools such as Blender and MeshLab. Managed service deployment on MS Azure and utilized O365 and Overleaf for document editing and academic writing. Maintained code integrity and version control using Git.
- ✧ **Outcomes:** Contributed to two papers published in IEEE, one submitted to ACM, and one submitted to CGF; one was preprinted on arXiv, and one additional paper is currently being prepared.

**Student Assistant, Department of Computing, The Hong Kong Polytechnic University**

02/2023 - 07/2023

- ✧ **Research & Development:** Investigated novel interaction and presentation methods for VR/CAVE systems to enhance the academic advising process for undergraduate students. Performed the platform migration from Oculus Quest to Votanic CAVE, including debugging, upgrading, and implementing new functionalities.
- ✧ **Collaboration & Communication:** Worked closely in a 10-team-member research group consisting of professors, PhD students, and research assistants; Actively participated in meetings and contributed to team discussions.
- ✧ **Software Tools:** Developed applications using Unity and Microsoft Visual Studio, integrating various SDKs from different device platforms. Utilized Git for version control and Office 365 for documentation purposes.
- ✧ **Outcomes:** Developed two major system versions with enhanced functionalities, utilized for department demonstrations and as part of ongoing research initiatives.

## PROJECT EXPERIENCE

### VR Mover: An LLM-Empowered Multimodal Interface for VR Object Manipulation 07/2024 – 02/2025

- ✧ **System:** Developed a VR interior design application leveraging GPT-4o to interpret multimodal user inputs (speech, gestures, and viewpoints) and generate API calls for real-time object manipulation.
- ✧ **User-study:** Engaged 30 users (6 pilot and 24 formal study). Results demonstrated significant improvements in usability, reduced workload, higher naturalness, and reduced arm fatigue, compared to traditional VR interfaces.
- ✧ **Participation:** Contributed to system design, development, user studies, and academic writing; signed as the first author.
- ✧ **Outcome:** Pre-printed on arXiv; submitted to ACM Transactions on Computer-Human Interaction (TOCHI).

### 3DGM: 3D Gaussian Model for Animation and Texturing 10/2023 – 08/2024

- ✧ **System:** Developed a mesh proxy-based 3D Gaussian renderer supporting novel animation and UV mapping.
- ✧ **Evaluation:** Achieved superior novel-view and animation synthesis quality over traditional 3D Gaussian Splatting; successfully implemented texture transferring. Ongoing experiments aim to validate the improvements further.
- ✧ **Participation:** Conducted literature reviews, designed methodologies, implemented systems, conducted experiments, and contributed to academic writing.
- ✧ **Outcome:** Pre-printed on arXiv; submitted to Computer Graphics Forum (CGF).

### KCube-KG: Multi-user Knowledge Graph Guided Mind Map Editor in Edu-metaverse 04/2024 – 02/2024

- ✧ **System:** Created a real-time communication mind map editor integrated with a knowledge graph for enhanced brainstorming in VR environments.
- ✧ **User-study:** Conducted a user study with 24 participants, demonstrating heightened engagement and effectiveness in collaborative learning within the education metaverse, compared to traditional online meetings and collaborative tools.
- ✧ **Participation:** Performed system design and implementation, conducted user studies, crafted demonstrative figures, and authored academic papers.
- ✧ **Outcome:** Published in IEEE Transactions on Learning Technologies (TLT).

### Slides Plus: Automatic Slides Publication for PowerPoint – Undergraduate Capstone Project 10/2022 - 04/2023

- ✧ **System:** Developed an enhancement tool for Microsoft PowerPoint, incorporating interactive features and mind maps for enriched online and offline class presentations.
- ✧ **User-study:** The tool's usability was highly praised, achieving over 90% satisfaction among 16 participants in perceived usability assessments.
- ✧ **Participation:** Managed system design, documentation, full-stack development, user studies, data analysis, reporting.
- ✧ **Outcome:** Received the Excellent Presentation in the Best Project Award Competition (Department of Computing, PolyU) and InfoTech Job Market Driven Scholarship (Info Tech, HK).

### A CAVE-VR System for Tertiary Architecture, Engineering, and Construction (AEC) Education 09/2021 - 03/2022

- ✧ **System:** Designed and developed an immersive educational software for CAVE systems, enhancing learning experiences for students in AEC fields.
- ✧ **User-study:** Engaged 104 students in a controlled experiment, demonstrating significant improvements in learning acquisition and user satisfaction, compared to the traditional offline teaching environment.
- ✧ **Participation:** Responsible for system & interaction design and development, user study, figure demonstration, and academic paper writing.
- ✧ **Outcome:** Research published in the Journal of Civil Engineering Education.

## PUBLICATIONS

**(Reviewing)** Can You Move These Over There? An LLM-based VR Mover for Supporting Object Manipulation; **Xiangzhi Eric Wang**, Zackary P. T. Sin, Ye Jia, Daniel Archer, Wynonna H. Y. Fong, Qing Li, Chen Li; *ACM Transactions on Computer-Human Interaction (TOCHI)*.

**(Reviewing)** 3D Gaussian Model for Animation and Texturing; **Xiangzhi Eric Wang**, Zackary P. T. Sin; *Computer Graphics Forum (CGF)*.

**(Published)** NivTA: Towards a Naturally Interactable Edu-Metaverse Teaching Assistant for CAVE; Ye Jia, Zackary P. T. Sin, **Xiangzhi Eric Wang**, Chen Li, Peter H. F. Ng, Xiao Huang, Junnan Dong, Yaowei Wang, George Baci, Jiannong Cao, Qing Li; *2024 IEEE International Conference on Metaverse Computing, Networking, and Applications (MetaCom)*.

**(Published)** Knowledge-Graph-Driven Mind Mapping for Immersive Collaborative Learning: A Pilot Study in Edu-Metaverse; JIA, Ye; **WANG, Xiangzhi Eric**; SIN, Zackary P. T.; WU, Chun Hung; NG, Peter; HUANG, Xiao; BACIU, George; CAO, Jiannong; LI, Qing; *IEEE Transactions on Learning Technologies (TLT)*.

**(Published)** Examining the Effects of Immersive Learning Environment in Tertiary AEC Education: A CAVE-VR System for Students' Perception and Technology Acceptance; **Xiangzhi Wang**, Mo Chou, Xinyu Lai, Jingren Tang, Junyu Chen, Wai Kei Kong, Hung-Lin Chi, Michael C.H. Yam; *Journal of Civil Engineering Education*.