TONG WAI

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RESEARCH INTEREST

Data Visualization, AR/VR, Human-Computer Interaction

EDUCATION AND RESEARCH EXPERIENCE

Texas A&M University *01/2024 - Present*
Instructional assistant professor in the *School of Performance, Visualization and Fine Arts*

The Hong Kong University of Science and Technology *09/2023 - 12/2023*
Postdoctoral fellow in the Department of *Computer Science and Engineering*

The Hong Kong University of Science and Technology *09/2018 - 08/2023*
Ph.D. in the Department of *Computer Science and Engineering*
Thesis Topic: *Towards Effective Data Visualization by Fusing Immersive Technology into Traditional Workflow*
Advisors: Prof. Huamin Qu and Prof. Ting Chuen Pong

The Hong Kong University of Science and Technology *09/2014 - 08/2018*
B.Eng. in Department of *Computer Science and Engineering*

VISITING AND INTERNSHIPS

Virginia Tech (Virginia Polytechnic Institute and State University) *06/2022 - 09/2022*
Visiting Student (hosted by Dr. Yalong Yang)

PUBLICATIONS

Journal and Conference

VisTellAR: Embedding Data Visualization to Short-form Videos Using Mobile Augmented Reality
Wai Tong, Kento Shigyo, Linping Yuan, Mingming Fan, Ting-Chuen Pong, Huamin Qu, Meng Xia
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2024

"Make Interaction Situated": Designing User Acceptable Interaction for Situated Visualization in Public Environments
Qian Zhu, Zhuo Wang, Wei Zeng, **Wai Tong**, Weiyue Lin, Xiaojuan Ma
ACM Conference on Human Factors in Computing Systems (CHI), 2024

Exploring the Opportunity of Augmented Reality in Supporting Older Adults Explore and Learn Smartphone Applications
Xiaofu Jin, **Wai Tong**, Xiaoying Wei, Xian Wang, Emily Kuang, Xiaoyu Mo, Huamin Qu, Mingming Fan
ACM Conference on Human Factors in Computing Systems (CHI), 2024

Feeling Present! From Physical to Virtual Cinematography Lighting Education with Metashadow
Zheng Wei, Xian Xu, Lik-Hang Lee, **Wai Tong**, Huamin Qu, Pan Hui
ACM International Conference on Multimedia (MM), 2023

Towards an Understanding of Distributed Asymmetric Collaborative Visualization on Problem-solving
Wai Tong, Meng Xia, Jason Kamkwai Wong, Doug Bowman, Ting-Chuen Pong, Huamin Qu, and Yalong Yang
IEEE Conference on Virtual Reality and 3D User Interfaces (VR), 2023 Invited presentation at IEEE VIS 2023

Understanding 3D Data Videos: From Screens to Virtual Reality
Leni Yang, Aoyu Wu, **Wai Tong**, Xian Xu, Zheng Wei, and Huamin Qu
IEEE Pacific Visualization Symposium (PacificVis), 2023

🏆 **Exploring Interactions with Printed Data Visualizations in Augmented Reality**
Wai Tong, Zhutian Chen, Meng Xia, Leo Yu-Ho Lo, Linping Yuan, Benjamin Bach, and Huamin Qu
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2023 (**IEEE VIS 2022 Best Paper Honorable Mention Awards**) Invited presentation at ACM SIGGRAPH Asia 2022

ComputableViz: Mathematical Operators as a Formalism for Visualization Processing and Analysis
Aoyu Wu, **Wai Tong**, Haotian Li, Dominik Moritz, Yong Wang, and Huamin Qu
ACM Conference on Human Factors in Computing Systems (CHI), 2022

MobileVisFixer: Tailoring Web Visualizations for Mobile Phones Leveraging an Explainable Reinforcement Learning Framework
Aoyu Wu, **Wai Tong**, Tim Dwyer, Bongshin Lee, Petra Isenberg, and Huamin Qu
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2020

Augmenting Static Visualizations with PapARVis Designer
Zhutian Chen, **Wai Tong**, Qianwen Wang, Benjamin Bach, and Huamin Qu
ACM Conference on Human Factors in Computing Systems (CHI), 2020

Poster and Workshop

Time Walk: Blending Presence and History through AR Visualization
Wai Tong, Linping Yuan, Zikai Wen, Huamin Qu
IEEE Visualization Conference (VIS) Poster, 2023

Landslide visualization situated on tangible terrain models
Haobo Li, Kentaro Takahira, Kam Kwai Wong, Leni Yang, **Wai Tong**, Huamin Qu
IEEE Visualization Conference (VIS) Poster, 2023

Cinematography in the Metaverse: Exploring the Lighting Education on a Soundstage
Xian Xu, **Wai Tong**, Zheng Wei, Meng Xia, and Huamin Qu
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), 2023

Let Every Seat Be Perfect! A Case Study on Combining BIM and VR for Room Planning
Wai Tong*, Haotian Li*, Huan Wei*, Liwenhan Xie*, Yanna Lin*, and Huamin Qu (*: equal contribution)
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), 2022

PROJECTS

Hong Kong Research Grants Council (RGC) Project - Augmenting Situated Visualizations with Tangible User Interfaces   *09/2023 - 12/2023*

- Played a key role in writing the research proposal, mainly focusing on the tangible interaction aspect.
- Led research and methodology planning in the proposal.
- Awarded **over 1M HKD from the University Grants Committee** in Hong Kong.

Hong Kong Areas of Excellence (AoE) Project - Centre for Slope Safety   *09/2022 - 12/2023*

- Developed an innovative Augmented Reality (AR) application using gamification, data visualization, and immersive technology.
- Collaborated with a multidisciplinary team to create an AR experience for slope safety education.
- Deployed the system in the visiting center of the HKUST Guangzhou campus.

HKUST Library Map Exhibition featured with AR   *06/2022 - 12/2023*

- Led the development of an Augmented Reality (AR) mobile application based on iPad to enhance the experience in HKUST library historical map exhibition.

VisPIE - Visualizing Sustainability   *04/2022*

- Designed and developed USTreePlantAR, an AR mobile application promoting sustainable campus actions.
- Leveraged XR, digital twin, and data visualization techniques to quantify and visualize sustainability efforts.
- Implemented gamification elements to incentivize and engage users in long-term sustainability actions.
- Received the **Deloitte ESG Innovation Award in hackUST 2022** for the project's impact and creativity.

Immersive Storytelling for HKUST 30th Anniversary   *11/2021 - 12/2023*

- Led the development of an Augmented Reality (AR) website to commemorate HKUST's 30th Anniversary.
- Utilized AR and Data Visualization techniques to create an immersive and interactive historical experience.
- Collaborated with a team to visualize the university's timeline and important events along a physical corridor on campus.
- Employed using the 8th Wall library for Web AR development, enhancing the user experience.

Pulse of HKUST   *09/2018 - 12/2023*

- Played a key role in developing a smart campus project that combines IoT, big data, and data visualization.
- Developed an interactive visualization system and a mobile web application using Vue.js and d3.js.
- Implemented backend data processing using Python to handle and analyze data streams.
- Received the **Student Innovation Gold Award in HKICT 2019** and a **Merit award in the R&D category in APICTA 2019** for the project's technological advancements.

TEACHING EXPERIENCE

Courses@TAMU as instructor

VIZA 662: Physical Computing for Art and Design	2023 Spring
VIST 173: Foundations of Visual Computing II	2023 Spring

Courses@HKUST as teaching assistance

COMP 2012: Object-Oriented Programming and Data Structures	2021 Spring
COMP 1942: Exploring and Visualizing Data	2020 Spring
COMP 1022Q: Introduction to Computing with Excel VBA	2019 Fall
COMP 3511: Operating System	2018 Fall

COMMUNITY SERVICES

Conference: Reviewer of ACM CHI 2024, 2023; IEEE VIS 2024, 2023; IEEE VR 2024; PacificVis 2024; ACM CHI LBW 2023; EuroVis 2023; ChinaVis 2022

Journal: Reviewer of IEEE TVCG; Virtual Reality