Yuan (Constant) Chen

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Research Focus

Drawing from human-computer interaction (HCI) and extended reality (XR), I design and develop methods and systems to facilitate interactions anytime, anywhere. I study XR interaction methods, physical-virtual object interactions, and context-aware mixed environments, aiming to promote widespread XR experiences.

Education

2021 – 2024 **University of Waterloo & Université de Lille**
Ph.D. in Computer Science
Thesis: *Pervasive Desktop Computing by Direct Manipulation of an Augmented Lamp*
Advisors: Géry Casiez, Edward Lank, Sylvain Malacria & Daniel Vogel

2018 – 2020 **University of Waterloo**
M.Math in Computer Science (Thesis & Co-op Options)
Thesis: *Viewport- and World-based Personal Device Point-Select Interactions in the Augmented Reality*
Advisors: Keiko Katsuragawa & Edward Lank

2014 – 2018 **Hong Kong University of Science and Technology**
B.Eng. in Computer Science and Mathematics
Advisors: Huamin Qu & Xiaojuan Ma

Experience

2021 – 2024 **University of Waterloo & Université de Lille & Inria**
Graduate Research Student
Advisors: Géry Casiez, Edward Lank, Sylvain Malacria & Daniel Vogel
- Researched in methods and systems to create pervasive desktop computing environments.
- Designed and built a lamp-based system enabling bidirectional connection, context-aware interaction between desktop and physical spaces [C.6].
- Conducted user studies to understand the intended use effect of an object on its acquisition [C.5] and explore control mechanisms on 2D dynamic peephole pointing [C.7].

2020 **Huawei Technologies Canada**
Assistant Engineer (Co-op, Intern) & Support Engineer (Part-time)
Advisors: Junwei Sun, Qiang Xu & Pourang Irani
- Implemented VR systems using Unity and Godot; designed and conducted user studies to research on occluded-target [C.3] and moving target [C.4] selection in VR.
- Evaluated a 360 VR video editing technique to enhance user productivity through user studies.

2018 – 2020 **University of Waterloo**
Graduate Research Student
Advisors: Keiko Katsuragawa & Edward Lank
- Researched in 3D pointing in the Augmented Reality through viewport- and world-based viewing paradigms using everyday smart devices [T.1, C.2].

2018 **Tencent**
Research & Development Intern
Advisors: Yu-Wing Tai & Xiaoyong Shen
- Developed a deep learning model using PyTorch for commodity detection in unmanned stores, focusing on data augmentation and model analysis.

2017 – 2018 **Hong Kong University of Science and Technology**
Undergraduate Research Student
Advisors: Xiaojuan MA
- Led 4-person team to develop a Unity-based, gesture-controlled multiplayer RPG, implementing dynamic time warping for gesture recognition based on ultrasonic signals.

2017 **Hong Kong University of Science and Technology**
Undergraduate Research Student
Advisors: Huamin Qu
- Developed a D3.js and Vue.js-based visual analytics system for multi-dimensional decision-making, implementing decisive subspace algorithm and glyph-based design in force-directed layouts [C.1].

2016 **Hong Kong Applied Science and Technology Research Institute**
Research & Development Intern
Advisors: Ka Yuk Lee
- Built Docker images for agile development tools: Jira (MariaDB), Redmine, and GitLab (PostgreSQL).

Publications

Under Review [C.7] **Yuan Chen**, Géry Casiez, Sylvain Malacria, Daniel Vogel. 2D Dynamic Peephole Pointing using Coupled and Decoupled Target Acquisition on Single and Multiple Surfaces.

2024 [C.6] **Yuan Chen**, Géry Casiez, Sylvain Malacria, Daniel Vogel. LuxAR: A Direct Manipulation Projected Display to Extend and Augment Desktop Computing. In Proceedings of the 50th Graphics Interface Conference (GI '24).

2023 [C.5] **Yuan Chen**, Géry Casiez, Sylvain Malacria, Edward Lank. Exploring the Effects of Intended Use on Targeting in Virtual Reality. In Proceedings of the 49th Graphics Interface Conference (GI '23).

2021 [C.4] **Yuan Chen**, Junwei Sun, Qiang Xu, Edward Lank, Pourang Irani, Wei Li. Empirical Evaluation of Moving Target Selection in Virtual Reality Using Egocentric Metaphors. 18th IFIP TC 13 International Conference, Bari, Italy, August 30–September 3, 2021, Proceedings, Part IV 18 (INTERACT '2021).

	[C.3]	**Yuan Chen**, Junwei Sun, Qiang Xu, Edward Lank, Pourang Irani, Wei Li. Global Scene Filtering, Exploration, and Pointing in Occluded Virtual Space. 18th IFIP TC 13 International Conference, Bari, Italy, August 30–September 3, 2021, Proceedings, Part IV 18 (INTERACT '2021).
2020	[C.2 & T.1]	**Yuan Chen**, Keiko Katsuragawa, Edward Lank. Understanding viewport-and world-based pointing with everyday smart devices in immersive augmented reality. In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20).
2017	[C.1]	Xun Zhao, Yanhong Wu, Weiwei Cui, Xinnan Du, **Yuan Chen**, Yong Wang, Dik Lun Lee, Huamin Qu. Skylens: Visual analysis of skyline on multi-dimensional data. IEEE Transactions on Visual- ization and Computer Graphics (Proceedings of VAST 2017), 24(1), pp.246-255.

Academic Service

Reviewer

HCI	CHI: 2021, 2022, 2023, 2024, 2025
	ISS: 2024
	IJHCS: 2023, 2024
	IMWUT: 2022
	INTERACT: 2021, 2023
	MobileHCI: 2021
XR	ISMAR 2024
	VR 2022, 2025
	VRST 2022

Honours

2023	Special Recognition for Outstanding Reviews: CHI '23, INTERACT '23
2018	David R, Cheriton Graduate Scholarship, University of Waterloo
	International Masters Student Award, University of Waterloo
	Best Final Year Project Nomination, Hong Kong University of Science and Technology
2017-2018	First Class Honours Graduation, Hong Kong University of Science and Technology
2017	Champion of the HealthCare division, HackUST
2014-2015	University Admission Scholarship, Hong Kong University of Science and Technology

Teaching Experience

Teaching Assistant: **Lead weekly tutorials/office hours, mark assignments/exams, and provide feedback on students' projects.**

2024	Management Information Systems (CS330)
2022	App Development (CS398)

2021	User Interface (CS349) $\times 2$
	Numerical Computation (CS370)
	Introduction to Computer Programming 2 (CS106)
2020	Management Information Systems (CS330)
2019	User Interface (CS349)
	Introduction to Computer Programming 1 (CS105)
2018	Management Information Systems (CS330)

Skills

I am proficient in prototyping and developing XR experiences, leveraging a diverse skill set to address research questions. Competencies include:

Language	Python, C#, Java, C++, R, JavaScript
Framework	Pytorch, Flask, React.js, OpenCV
Software	Unity, Godot, Blender, Inkcape
Device	Meta Quest, Microsoft Hololens, OptiTrack, Vicon
Methodology	Experimental design, Quantitative analysis (Python + R), Qualitative analysis (interviews, surveys)

Reference

Available upon requests.