Liuchuan **Yu** (He/Him)

CS PhD Candidate | Dedicated to AI + XR

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"Stand Out Fit In"

Summary

Currently a CS PhD candidate at George Mason University under the guidance of Professor Craig Yu, with research centered on leveraging Artificial Intelligence (AI) and Extended Reality (XR)—including Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR)—to enhance human performance. Published and submitted to top-tier venues such as ACM CHI and IEEE VR, ISMAR, VRST, and Virtual Reality conferences and journals. Recognized through multiple channels: selected as an academic research partner for Meta Project Aria smart glasses program; recipient of several design awards for innovations in AI + XR; and featured on podcasts highlighting impactful VR research. Served as a guest speaker and project mentor for an Augmented Reality course at George Washington University, contributing to immersive systems education and student projects. Technically proficient in Python, Unity, Meta Quest 2/Pro/3, PICO 4 Ultra, Microsoft HoloLens 2, and networked multiplayer development. Hold a bachelor's degree in Remote Sensing, a master's degree in Software Engineering, and a master's degree in Computer Science, with over five years of industry experience as a software/system/machine learning engineer. Interned at PICO Lab, ByteDance in Summer 2025, conducting research on VR teleoperation. Passionate about driving innovation at the intersection of XR and AI to create immersive and transformative experiences.

Education

GMU (George Mason University) — *Fairfax, VA, USA*

PH.D. IN COMPUTER SCIENCE — *Aug. 2021 - Present*

- Dissertation Topic: **AI-Assisted XR Applications for Human Performance Enhancement**
- **Design Computing and Extended Reality (DCXR)** group supervised by **Prof. Craig Yu**

GMU (George Mason University) — *Fairfax, VA, USA*

M.S. IN COMPUTER SCIENCE — *Aug. 2021 - May. 2024*

- Distinguished Academic Achievement Award

BJTU (Beijing Jiaotong University) — *Haidian, Beijing, China*

M.S. IN SOFTWARE ENGINEERING — *Sep. 2017 - Jun. 2020*

- Thesis: Research on Domain Adaptation and Task Porting Methods for Transfer Learning
- Code: Transfer Learning Baseline Toolbox Based on Object Oriented Programming
- Code: Visualize Transfer Learning Datasets

SDUST (Shandong University of Science and Technology) — *Qingdao, Shandong, China*

B.S. IN REMOTE SENSING SCIENCE AND TECHNOLOGY — *Sep. 2011 - Jun. 2015*

- Thesis: Design and Implementation of Photogrammetric Fundamental Algorithms Based on Qt
- Code: YZCG - Photogrammetry Data Processing System

Honors & Awards

2025 Dec	**PyTorch/ExecuTorch Contributor**, PR#16011	*Meta*
2025 Apr	🏆 **Silver Winner - Social Design: Design for Society**, Float Mind	*NY Product Design Awards 2025*
2025 Apr	🏆 **Silver Winner - Virtual Reality (VR) Design**, Float Mind	*Indigo Design Awards 2025*
2025 Apr	🏆 **Silver Winner - UX, Interface & Navigation for Games**, Float Mind	*Indigo Design Awards 2025*
2025 Mar	🏆 **Silver Winner - Product Design: Gaming, AR & VR**, Float Mind	*MUSE Design Awards 2025*
2025 Jan	🏆 **LA Emergency Response Prize**, Memoverse	*MIT Reality Hack 2025*
2025 Jan	**XR Design Challenge 2024 Finalist**, Float Mind	*Immersive Insiders w/ Meta etc.*
2025 Jan	**XR Design Challenge 2024 Finalist**, Meal Master	*Immersive Insiders w/ Meta etc.*
2024 Dec	**Panel Member**, AR/VR User Research Panel	*Meta*
2024 Oct	🏆 **Best Real-World Game Prize**, BloomCraft: Garden Guardians	*Niantic Create & Play Challenge*
2024 Fall	**CSCI 6907-83 Guest Speaker & Project Mentor**, Advanced Topics in Augmented Reality (AR)	*GWU*
2024 Jul	**Academic Partner**, Project Aria Research Partnership Program	*Meta*
2024 Jul	**VR Work Featured on Podcast**, VR Simulations and ADHD in Construction	*Peggy Smedley Show*
2024 Jun	**ACM Professional Membership**, EICS 2024 Reviewing Appreciation	*ACM*
2024 May	**Distinguished Academic Achievement Award**, Computer Science Department	*GMU*
2024 Apr	**2024 Summer GRA Fellowship**, Center for Advancing Human-Machine Partnership (CAHMP)	*GMU*

Publication

Reality Copilot: Voice-First Human–AI Collaboration in Mixed Reality Using Large Multimodal Models [Under Review] [CHI 2026]
Barcelona, Spain
Liuchuan Yu; Yongqi Zhang; Lap-Fai Yu
Apr. 2026

HieraVisVR: Hierarchical Visual Analytics for Motion-Centric VR Playtesting [CHI 2026]
Barcelona, Spain
Yongqi Zhang; Erdem Murat; **Liuchuan Yu**; Haikun Huang; Minsoo Choi; Christos Mousas; Lap-Fai Yu
Apr. 2026

Understanding the Needs and Challenges of Developing Robot Teleoperation Applications using Mixed Reality Headsets [AHFE 2026]
Istanbul, Türkiye
Liuchuan Yu; Ke Jing; Zhigen Zhao; Ning Yang; Zhicong Lu
Jul. 2026

Multimodal Psychophysiological Analysis for Team Situation Awareness in Simulated Construction Environments [CRC 2026]
San Antonio, Texas, USA
Ching-Yu Cheng; **Liuchuan Yu**; Lap-Fai Yu; Behzad Esmaeili
Mar. 2026

Enriching Physical-Virtual Interaction in AR Gaming by Tracking Identical Objects via an Egocentric Partial Observation Frame [Virtual Reality]
Springer Nature
Liuchuan Yu; Ching-I Huang; Hsueh-Cheng Wang; Lap-Fai Yu

XRoboToolkit: A Cross-Platform Framework for Robot Teleoperation [SII 2026]
Cancun, Mexico
Zhigen Zhao; **Liuchuan Yu**; Ke Jing; Ning Yang
Jan. 2026

Col-Con: A Collaborative and Configurable VR Platform for Construction — A Pipe Installation Case Study [Virtual Reality]
Springer Nature
Liuchuan Yu; Ching-Yu Cheng; William F Ranc; Joshua Dow; Michael Szilagyi; Haikun Huang; Sungsoo Ray Hong; Behzad Esmaeili; Lap-Fai Yu

You Are Not Alone: Designing Body Doubling for ADHD in Virtual Reality
arXiv
Zinat Ara; Imtiaz Bin Rahim; Puqi Zhou; **Liuchuan Yu**; Behzad Esmaeili; Lap-Fai Yu; Sungsoo Ray Hong

Memoverse: A Spatial WebAR Social Platform for Memories [VRST 2025]
Montreal, Canada
Liuchuan Yu; Yan Zeng; Tingting Luo; Zihan Li
Nov. 2025

FloatMind: AI-Driven Emotional Engagement for Gamified Meditation in Mixed Reality [ISMAR 2025]
Daejeon, South Korea
Liuchuan Yu; Shuqi Liao; Yan Zeng; Tingting Luo; Zihan Li
Oct. 2025

Multi-Player VR Marble Run Game for Physics Co-Learning [ISMAR 2025]
Daejeon, South Korea
William Ranc; Thanh Nguyen; **Liuchuan Yu**; Yongqi Zhang; Minyoung Kim; Haikun Huang; Lap-Fai Yu
Oct. 2025

Visual Allocation of Teams In The Construction Industry: Team Situation Awareness Under Information Overload In Human-AI Collaboration [AHFE 2025]
Orlando, Florida, USA
Ching-Yu Cheng; **Liuchuan Yu**; Lap-Fai Yu; Behzad Esmaeili
Jul. 2025

Player-Centric Difficulty Prediction for Parameterized VR Platformer Gameplay [Under Review]
IEEE Transactions on Visualization and Computer Graphic
Erdem Murat; **Liuchuan Yu**; Siraj Sabah; Haikun Huang; Lap-Fai Yu

HoloCook: A Real-Time Remote Mixed Reality Cooking Tutoring System [HCII 2024]
Washington DC, USA
Liuchuan Yu; Bo Han; Songqing Chen; Lap-Fai Yu
Jul. 2024

HoloAAC: A Mixed Reality AAC Application for People with Expressive Language Difficulties [HCII 2024] — *Washington DC, USA*

Liuchuan Yu; Huining Feng; Rawan Alghofaili; Boyoung Byun; Tiffany O'Neal; Swati Rampalli; Yoosun Chung; Vivian Genaro Motti; Lap-Fai Yu — *Jul. 2024*

Establishing Design Computing and Extended Reality Facilities for Remote Virtual Reality Training [IEEEVR 2023] — *Shanghai, China*

Lap-Fai Yu; Changyang Li; Yongqi Zhang; Rawan Alghofaili; Haikun Huang; Liuchuan Yu; Huimin Liu; Minsoo Choi; Brenda Bannan; Christos Mousas — *Mar. 2023*

Synthesizing Shared Space Virtual Reality Fire Evacuation Training Drills [ISMAR 2022] — *Singapore, Singapore*

Huimin Liu; Minsoo Choi; Liuchuan Yu; Alexandros Koilias; Lap-Fai Yu; Christos Mousas — *Oct. 2022*

Reviewing

2025 **Reviewer**, Computer Animation and Virtual Worlds
2025 **Reviewer**, VRST 2025 Papers
2025 **Reviewer**, ISMAR 2025 Papers
2025 **Reviewer**, Computer Animation and Virtual Worlds
2024 **Reviewer**, PRESENCE: Virtual and Augmented Reality
2024 **Reviewer**, CHI 2025 Papers
2024 **Reviewer**, IEEE VR 2025 Papers
2024 **Reviewer**, VRST 2024 Papers
2024 **Reviewer**, ISS 2024 Papers
2024 **Reviewer**, AutomotiveUI 2024 Works in Progress
2024 **Reviewer**, ISMAR 2024 Posters
2024 **Reviewer**, ISMAR 2024 Conference Papers
2024 **Reviewer**, ISMAR 2024 Journal Papers
2024 **Reviewer**, EICS 2024 Demos and Posters
2023 **Reviewer**, IEEE VR 2023 Workshop: Workshop: 3D Content Creation for Simulated Training in XR
2022 **Reviewer**, IEEE VR 2022 Workshop: 3D Content Creation for Sim. Training (TrainingXR)

Graduate Teaching/Research Assistant

Graduate Research Assistant

2024 **Summer**, Predicting Team Cohesion in Collaborative VR Construction Scenarios
2023 **Summer**, Multiplayer VR Construction Training Platform Using Quest Pro
2022 **Summer**, Supporting Dynamic Scene on AR Using HoloLens 2

Graduate Teaching Assistant

2026 **Spring**, CS551 Computer Graphics
2025 **Fall**, CS685 Autonomous Robotics
2025 **Spring**, CS452 Virtual Reality
2024 **Fall**, CS551 Computer Graphics
2024 **Spring**, CS310 Data Structures
2023 **Fall**, CS452 Virtual Reality
2023 **Spring**, CS310 Data Structures
2022 **Fall**, CS310 Data Structures
2022 **Spring**, CS211 Object Oriented Programming
2021 **Fall**, CS211 Object Oriented Programming

Volunteering

2022 - **President**, Computer Science Graduate Student Association (CSGSA) — *GMU*
2021 **Volunteer**, Gradstravaganza Picnic — *GMU*

Work Experience [Intern & FTE]

PICO Lab, ByteDance Inc.
San Jose, CA, USA

Teleoperation Research Intern
May. 2025 - Aug. 2025

- Conduct research in robot teleoperation and human-robot interaction.
- Develop and evaluate novel control schemes for robotic systems using VR interfaces.
- Collaborated with sales teams to present technical details and prepare user manuals for company products.
- Implement and test integration of various input devices (gloves, motion trackers) for dexterous manipulation.
- Design and optimize stereo vision systems for enhanced spatial awareness.
- Prototype VR applications using Unity for robot teleoperation.
- Conduct user studies and performance evaluations.
- Collaborate with interdisciplinary team members on system integration.

JingHang Co., Ltd.
Beijing, China

Python Software Engineer
Mar. 2021 - Apr. 2021

- Developed a standardized storage format for English examination data, including A-Level, IELTS, and TOEFL.
- Performed extraction, transformation, and loading (ETL) of unstructured data into a unified, structured format.
- Designed and implemented a web interface for seamless integration and usage by other departments.

KoudaiCaifu Co., Ltd.
Beijing, China

Finance Development Engineer
Aug. 2020 - Mar. 2021

- Managed and maintained the Intelligent Investment Consultant System, ensuring data stream accuracy and reliability.
- Identified and resolved bugs in the company's online systems and applications, ensuring smooth operations.
- Enhanced departmental efficiency by introducing innovative utilities and engineering methodologies.

LinkDoc Co., Ltd.
Beijing, China

Python System R&D Engineer
Aug. 2018 - Dec. 2019

- Led the development, optimization, and maintenance of the Clinical Information Extraction System.
- Enhanced structural accuracy across multiple modules of electronic medical records (EMRs).
- Designed and maintained a PyCharm IDE plugin to support syntax highlighting, auto-completion, and function navigation for a Domain-Specific Language (DSL).

EmoKit Co., Ltd.
Beijing, China

Machine Learning Engineer
Feb. 2018 - Jul. 2018

- Led research and development of machine learning algorithms to advance project outcomes.
- Applied machine learning techniques to support anti-fraud initiatives in the financial industry.
- Integrated advanced algorithms to drive project progress and efficiency.
- Established and introduced a centralized background algorithm center to streamline development and deployment.

WaterTek Corp.
Beijing, China

Software Engineer
Jul. 2015 - Feb. 2018

- Conducted research on the organization and storage of spatio-temporal big data to improve system efficiency.
- Developed, packaged, and maintained core algorithms using C/C++ for robust performance.
- Designed and implemented an indoor navigation application for the iOS platform.

Esri China Co., Ltd.
Beijing, China

Technology Engineer Intern
Aug. 2014 - Feb. 2015

- Developed prototypes using C#, C++, Java, HTML, and JavaScript on the ArcGIS platform to meet client requirements.
- Designed database structures and authored SQL queries to support application functionality.
- Collaborated with sales teams to present technical details and prepare user manuals for company products.

Extracurricular Activity

HMC (Human Motion Creator)
Python

SOLO

- 🕺**Text-to-Motion Generation**: Powered by Tencent HY-Motion 1.0 and Meta MHR (Momentum Human Rig).
- 😎**Meta XR-Ready**: Compatible with SMPLX and Meta Movement SDK.
- ⭐**Easy Use**: FBX output with embedded animation.
- Video | Code

Reality Copilot (Your Copilot in Real Reality)
Meta Horizon Start Developer Competition

SOLO

- Reality Copilot is an AI assistant that understands and enhances our physical world in mixed reality.
- 🎙️**Voice-First Interaction**, 📹**Hardware Recording with Microphone and Speaker**, 📧**Context-Aware Email**, Powered by 🤖**FastVLM**, ✂️**SAM3**, 🎨**SAM3D**, and 🌐**Gemini/OpenAI**.
- Video | Devpost

Memoverse (🏆 LA Emergency Response Prize) *MIT Reality Hack 2025*

Developer

- A mobile AR experience allows users to explore 3D scans of sites before the fire and share memories, preserving the essence of lost spaces and offering comfort to those affected.
- **Video** | **8th Wall**
- Team members: **Zihan Li**, **Yan Zeng**, **Tingting Luo**, and **Ernest Choi**.

Float Mind (Finalist) *XR Design Challenge 2024*

Developer

- Float Mind is an AI-powered MR gamified meditation app designed for stress relief and immersive relaxation.
- **Short Video** | **Long Video** | **Walk-Through Video on Windows** | **Windows Exectable** | **Github**
- Team members: **Zihan Li**, **Yan Zeng**, **Tingting Luo**, and **Shuqi Liao**.
- 🏆 **NY Product Design Awards 2025** | 🏆 **Indigo Design Awards 2025** | 🏆 **MUSE Design Awards 2025**

Meal Master (Finalist) *XR Design Challenge 2024*

Developer

- The Meal Master is an innovative MR cooking assistant designed to help users make informed, healthy meal choices while simplifying the cooking process.
- **Video**
- Team members: **Yvie Zhang**

BloomCraft: Garden Guardians (🏆 Best Real-Word Game Prize) *Niantic Studio*

Core Developer

- Discover, plant, and protect a sunflower in our game! Help from Red Bird, water from clouds, and guard against bugs in this interactive adventure.
- **Video** | **8th Wall**
- Team members: **Yvie Zhang** [Artistic Designer], **Manuel Rebol** [User Experience], and **Hurriyet Ok** [Project Manager].

OmniCounter (iOS App) *Objective-C/Swift*

Developer

- OmniCounter is a Fully Functional Calculator that supports basic, scientific, trigonometry, algebra, calculus, combinatorics, datetime, economics, geometry, matrix, vector, number theory, statistics, and so on.

conda-env-export (PYPI Package) *Python*

Developer

- It's a useful PyPI package that aims to export conda env dependencies and pip requirements to ONE yml file.

Watermark Terminator (PDF Utility) *Python*

Developer

- It's a simple but powerful application to remove text and/or image watermarks in PDF files and output PDF and/or DOCX files.

3to1 (Utility) *Python*

Developer

- It's designed to merge 3 kinds of online course resources (*.swf, *.grf, *.xml) into 1 video.

Skills

XR Development	Unity, Meta XR SDKs, Meta Quest 2/Pro/3, PICO 4 Ultra, Meta Project Aria, Mixed Reality Toolkit (MRTK), HoloLens 2
Programming	C#, Python, C++, Java, C, SQL, LaTeX
Multimedia	Photoshop, Illustrator, Premiere Pro
3D Related	3ds Max, Blender, 3D Scanning, 3D Printing, Laser Cutting
Languages	English, Mandarian