Yunkai Xu

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yqx5322@psu.edu Xuyk021@github.io Linkedin-Yunkai Google Scholar

Education

Pennsylvania State University *Aug 2024 - Prsent*
MS in Informatics

- GPA: 4.0/4.0
- **Advisor:** Dr. Saeed Abdullah
- **Research Interests:** Human-Computer Interaction, Conversational AI for Healthcare
- **Coursework:** Data Mining, HCI Research Method, Human-centered AI, Social Informatics

Zhejiang University *Sept 2020 - June 2024*
BE in Industrial Design

- GPA: 3.97/4.0 *Ranking* : 6/55
- **Advisor:** Dr. Guanyun Wang, Dr. Wei Xiang
- **Research Interests:** Accessible HCI, Fabrication, Interactive Systems
- **Thesis:** *Research and Design Application of FDM-based 3D Printing for Biomimetic Hair*
- **Coursework:** Information Product Design, Information & Interaction Design, User Experience Design

Experience

Research Internship *Notre Dame, USA*
The University of Notre Dame *June 2025 - Present*

- Engineered a multi-user collaborative Mixed Reality (MR) system in Unity to investigate remote teamwork dynamics. Implemented a framework for shared tasks, synchronous interaction, and condition-based experimental control.
- Authored the Related Work section on MR-mediated collaboration and coordination, synthesizing prior findings to frame research questions and hypothesis.

Research Internship *State College, USA*
Pennsylvania State University *November 2024 - Present*

- Developed and evaluated an LLM-powered voice assistant to deliver cognitive simulation therapy for individuals with dementia, conducting iterative design cycles and pilot user studies to refine the interaction.
- Co-developed a voice-based cancer care intervention in collaboration with the **University of Pittsburgh**, integrating script-based dialogue and interventions in real-word scenarios.
- Leading a research project on multilingual therapy delivery, investigating how large language models support mental health interventions across diverse languages and cultural contexts.

Research Internship *Hangzhou, China*
International Design Institute of Zhejiang University *April 2023 - April 2024*

- Led a project developing an LLM-based Augmentative and Alternative Communication (AAC) tool (*SocializeChat*), directing all phases from system design and user study protocol to data collection and manuscript preparation;Authored a CHI'24 submission as **first student author**.
- Co-led a 3D printing prototyping project (*Xhair*) integrating HCI and fabrication; contributed to a UIST'24 submission as **second student author (Accepted, 26% acceptance rate)**.

Core Founder Member *Hangzhou, China*
Pixel Leap *April 2022 - April 2023*

- Co-founded Pixel Leap to develop a virtual companion for elderly adults, leading the design of interactive motions and motion capture. Our work was **featured on the front page of People's Daily, China's leading national newspaper**.

Publications

Visit my personal website or Google Scholar for more latest publications and projects.

Athena: A Conversational Book Discovery System with LLM-Powered Retrieval-Augmented Generation (RAG) and Interactive Graph Visualization

Matt Murtagh White*, ***Yunkai Xu***, Nicole León*

UIST 2025 Poster, In Press. *Co-first author.

SocializeChat: A GPT-Based AAC Tool Grounded in Personal Memories to Support Social Communication

Wei Xiang, ***Yunkai Xu****, Yuyang Fang, Zhuyu Teng, Zhaoqu Jiang, BeiJia Hu, Jinguo Yang

SMC 2025, In Press. *Corresponding author.

Xhair: 3D Printing Hair-like Structures with Multi-form, Multi-property and Multi-function

Guanyun Wang, Junzhe Ji, ***Yunkai Xu***, Lei Ren, Xiaoyang Wu, Chunyuan Zheng, Xiaojing Zhou, Xing Tang, Boyu Feng, Lingyun Sun, Jiaji Li

UIST 2024 Full Paper. [Full Paper]

SocializeChat: a GPT-based AAC Tool for Social Communication Through Eye Gazing

Yuyang Fang, ***Yunkai Xu***, Zhuyu Teng, Zhaoqu Jiang, Wei Xiang

Ubicomp 2023 Poster. [Full Paper]

Selected Academic and Personal Projects

Athena: A Conversational Book Discovery System *2025*

- Designed and Developed a conversational book discovery system with LLM-powered retrieval-augmented generation (RAG) and interactive graph visualization, enabling users to discover books through natural language queries and explore relationships between books feedback.
- Tools Used: Conversational Agents Design and Development, User Study, Figma, Research Writing

EnvVISTA: An Conversational Data Exploration System for Urban Data *2025*

- Developed the end-to-end prototype based on NYC OpenData: implemented interactive maps and game mechanics, and prototyped LLM-driven narratives, conversational Q&A, and insight checks.
- Tools Used: Python, Data Visualization, Conversational Agents Design and Development

SocializeChat: LLM-Powered AAC Tools for Social Interaction *[View PDF] 2023*

- Designed a mobile application with LLM for people with physical disabilities, helping them to have fluent and engaging social conversations with others.
- Tools Used: Swift, Python, User Study, Figma, Research Writing

SmartLumina: In-car Lighting Interactive Design *[View PDF] 2023*

- Developed a new interaction system designed for both autonomous drivers and regular passengers familiar with these vehicle conditions, enabling natural interaction through gestures and provides relaxing feedback through lighting.
- Tools Used: User Study, Python, Arduino

Chasing: A VR Parkour Game *[View PDF] 2023*

- The theme style of this VR parkour game is "Data Punk" parkour game. Players experience the game from a first-person perspective and interact using VR controllers.
- Tools Used: Unity, C#, Oculus Development

Memotion Diary *2022*

- Designed a WeChat mini program, which allows users to record their emotions in a diary every day and review them repeatedly in the future; Awarded **Third Prize, East China Division, China Collegiate Computing Contest**.
- Tools Used: Web Development, HTML/CSS

Honors and Awards

2024 Outstanding Undergraduate Thesis of Zhejiang University (Xhair)

2020 - 2022 Academic Excellence Student of Zhejiang University

2020 - 2022 Third Prize, Academic Scholarships of Zhejiang University (Top 20%)

2022 Third Prize in East China, China Collegiate Computing Contest

2022 Second Prize, Zhejiang University Industrial Design Competition

Skill Set

Programming: C++, C, Java, Python (Machine Learning, Data Analysis, LLMs), C# (Unity), HTML/CSS, Vue

Languages: TOFEL(108)