Jiayi Wen

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EDUCATION

Southern University of Science and Technology (SUSTech)

Shenzhen, China   *Sep. 2023 - Present*

M.Eng. in Intelligent Manufacturing and Robotics

- **Supervisor:** Prof. Marcel Zaes Sagesser and Prof. Luo Tao
- **Research Focus:** Human-Computer Interaction (HCI), Generative AI, Virtual Reality (VR), Intelligent Agent Design
- **Related Modules:** Matrix Analysis and Application, Robot Design Science & Social Value, Design Innovation

Central South University (CSU)

Changsha, China   *Sep. 2019 - Jun. 2023*

B.Eng. in Civil Engineering

- **Graduation Thesis:** Data Processing and Visualization of Subgrade Intelligent Construction System
- **Relevant Modules:** Advanced Mathematics, Scientific Computing and MATLAB, Fundamental of Computer Programming, C++ Programming

RESEARCH EXPERIENCE

Grounded VR: Localizing Dynamic Auditory Events in Complex Virtual Environments With a Vibration Floor

Project Lead   *Sep. 2023 - Present*

- Investigated the role of haptic feedback in VR by designing a novel multimodal interaction system using a vibro-tactile floor to enhance auditory perception.
- Developed a multi-channel, sound-to-vibration rendering pipeline in C# and Max/MSP to provide directional and categorical sound cues through physical vibration.
- User studies showed the system improved sound localization accuracy by 28.7% and increased user-reported immersion and enjoyment by 17%.
- **A paper based on this research is currently in submission for a top-tier international conference.**

Development and Deployment of LLM-Powered Intelligent Systems

Project Lead   *Feb. 2025 - Present*

- **RAG Systems:** Led development of a Retrieval-Augmented Generation (RAG) system for complex Q&A on academic papers using LangChain. Implemented a hybrid retrieval model (BM25 + FAISS) with a reranker, achieving Rank 5/317 in the CCKS 2025 Challenge.
- **Multi-Agent Systems:** Architected a multi-agent framework in Unity/C# with dynamic, LLM-driven character interactions and long-term memory using Function Calling.
- **Edge Deployment:** Deployed a quantized LLM on a Raspberry Pi 5 using llama.cpp for an offline voice-interactive emotional companion assistant, integrating Vosk (ASR) and GPT-SOVITS (TTS).

"The Big Voice": Voice Remix App Development and User Study

Key Laboratory Project of the Ministry of Culture and Tourism of China   *2024*

- Conducted practice-based research on a novel voice remix application, "The Big Voice".
- Developed an audio processing backend with Flask and ffmpeg and a D3.js interactive frontend with UMAP+t-SNE for perceptual audio exploration.
- Facilitated participatory user testing sessions to gather feedback and optimize UI/UX.

CONFERENCE PRESENTATIONS

CVVR International Conference on Computer Vision and Virtual Reality

Presenter   *Oct 2023*

- Presented the paper: *Environmental Vibrations: A Subtle Yet Crucial Feedback Modality in Virtual Reality.*

Industry Experience

Lenovo, Solutions and Services Group (SSG)

Technical Product Manager Intern (AI) *May 2025 - Present*

- Led the 0-to-1 product design of an "AI-Ask-Data" system for intelligent sales data analysis, defining modules for permissions, metrics, and visualization dashboards.
- Authored a strategic analysis report on 20+ AI platforms to guide departmental planning.

Bank of Changsha

Product Manager, Investment Banking Dept. *Jan 2023 - Apr 2023*

- Participated in projects providing financial products to pre-IPO and SME clients.
- Conducted new product testing and competitive analysis to inform product updates.
- Managed client liaison, presented customized financial plans, and maintained client relationships.

Teaching Experience

Teaching Assistant, SUSTech School of Design

- **DS366 Composing Experience**, Spring 2024
- **DS345 Sound Design**, Fall 2023

Awards & Competitions

- Rank 5/317 (Preliminary), CCKS 2025 Challenge: LLM Complex QA for Scientific Papers.
- Top 10 (Ongoing), CCKS 2025 Challenge: Event Evolution Generation for Social Media.
- First-Class Graduate Scholarship, Southern University of Science and Technology.
- Outstanding Student Cadre, Central South University.

Technical Skills

- **Programming:** Python (PyTorch, LangChain, Flask), C++, C#, MATLAB, JavaScript
- **AI & ML:** RAG Systems, LLM Fine-tuning & Quantization (llama.cpp), Prompt Engineering, Multi-Agent Systems, Dify, GPT-SOVITS, Vosk
- **Sound & VR:** Unity, Ableton Live, Max/MSP, FMOD, Wwise
- **Prototyping & Design:** Figma, Axure, Adobe Illustrator, D3.js, Fusion 360

Leadership & Extracurricular Activities

Psychological Mutual Aid Association, CSU

- **Minister of the Training Dept.** (Jun 2020 - Sep 2021): Organized psychological knowledge training and hosted mental health awareness competitions for the Civil Engineering Institute.
- **Member of the Training Dept.** (Jun 2019 - Sep 2020): Assisted in organizing training and participated in competitions.

Psychological Commissioner, Class of Civil Engineering, CSU

Sep 2019 - Jun 2023

- Monitored the psychological well-being of class members and assisted the university counselor with case management.