Wen Jiayi

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Education

Southern University of Science and Technology | **Intelligent Manufacturing and Robotics** | **Master** Sep 2023 – Jun 2026

- Research Focus: Human-Computer Interaction, Multimodal Interaction, Agent Design
- Core Courses: Robotic Design Science and Social Value, Design Innovation in Industrial Applications and Practice

Central South University | **Civil Engineering** | **Bachelor's Degree** Sep 2019 – Jun 2023

- Relevant Courses: Fundamentals of C++ Programming, Scientific Computing and MATLAB
- CET-6

Internship Experience

Lenovo Group, SSG, Technical Product Manager - AI Direction May 2025-Present

- Investigated and analyzed hardware performance and interface openness of multiple robotics platforms, proposed compatible algorithm embedding and secondary development solutions based on open-source projects.
- Tracked cutting-edge AI technologies (e.g., large models, edge computing), conducted in-depth research on 20+ AI development and productivity tools, produced 20+ page AI research reports and participated in internal technical seminars to inform long-term product planning.
- Developed a Minimum Viable Product (MVP) for an intelligent retail store agent using the Dify framework, implementing RAG-based multi-turn dialogues and automating the entire process from smart shopping guidance to order placement.

Bank of Changsha, Investment Banking Department, Product Manager Feb 2023-Jun 2023

- Participated in preliminary due diligence projects for Changsha Meditech Technology Co., Ltd. and Rongteng Technology Co., Ltd., assisting in compiling due diligence reports.
- Engaged in preparatory work for the "Spring Bamboo Initiative" strategic cooperation with Western Securities, coordinating business liaison meetings between both parties.

Project Experience

LangChain-based RAG System for Paper Query Feb 2025-Present

- Built on the **LangChain framework**, encapsulated custom toolchains to remotely call **SiliConflow API**, enabling structured parsing and abstract generation of local paper content.
- Integrated multi-turn dialogue and **viewpoint verification** modules, supporting natural language queries and dynamically constructing pro/con comparison structures based on literature content.
- Developing **RAG extension** capabilities to support third-party academic APIs (e.g., Consensus), enabling hybrid local+online retrieval.

IxDL: Interactive Design Language Agent Mar 2025-Present

- Constructed a RAG-based agent using **LangChain**, integrated a self-built IxDL syntax knowledge base to establish semantic mapping from **design language to natural language**.
- Built a bidirectional multimodal conversion agent using **GPT-4 API**, supporting mutual translation between natural language and IxDL expressions with **interactive effect preview** based on intermediate representations.
- Recursively segmented screenshots into semantic sub-regions by detecting explicit/implicit dividing lines (e.g., blank areas or color boundaries), then merged using MLLM.

Independent Research: Floor System Enhancing Sound Localization via Multimodal Interaction Sep 2023 −Present

- Designed and developed a multimodal interactive floor system integrating **C#** and **Max/MSP**, enabling synchronized audio and vibration output across eight spatial channels based on perceptual mapping.
- Proposed a real-time rendering algorithm incorporating spatial event detection and user orientation, improving directional discrimination through tightly coupled audio-haptic feedback.
- Conducted comparative user experiments against HTC VIVE; results showed a 28.7% increase in sound localization accuracy, 1−2s faster recognition, and 17% improvement in immersion.
- A paper is planned to be submitted to the VRST conference.

"Big-Voice": Development and Participatory User Research of a Novel Audio Mixing App Jul 2024 - Apr 2025

- Key Lab Project of Ministry of Culture and Tourism
- Built backend using **Flask framework**, integrated **ffmpeg** for automatic audio slicing and processing, supporting real-time upload and processing of user recordings.
- Utilized **UMAP** and **t-SNE** for audio feature dimensionality reduction, combined with **D3.js** to render interactive scatter plots for visual browsing and continuous playback of audio clips.

Development of Scalable Multi-Character Intelligent Dialogue Platform Jun 2025 - Present

- Built a distributed emotional interaction system supporting multi-turn dialogues and memory management using Streamlit frontend, Nginx reverse proxy, and Tencent Cloud.

- Currently demonstrating **full-character personification of "Senren Banka"**, flexibly switching between OpenAI/DeepSeek/Grok APIs with **high modularity and scalability**.
- Designed unified prompt interfaces and character behavior models supporting memory caching and multi-agent invocation, with backend-extensible characters and corpora.
- Developing **emoji triggering mechanisms** and smart response workflow modules to support language output + server resource linkage (e.g., emoji display).

Python & MySQL-based Highway Construction Progress Visualization System, Undergraduate Thesis Jan 2023-Jun 2023

- Focused on construction project management efficiency, designed and implemented a **real-time data visualization platform** to help managers monitor construction status and equipment operations.
- Created multi-dimensional data views including map annotations, progress curves, and equipment status, **enhancing project progress transparency and response speed**.
- Explored data-driven project management tool product design through equipment data integration solutions and UI optimization.

Teaching & Academic Activities

"Big Voice" Participatory Audio Workshop Oct 2024

- Co-organized a participatory workshop introducing the concept and system of the "Big Voice" audio mixing app to interdisciplinary participants.
- Guided field sound collection sessions in urban environments and conducted semi-structured interviews to explore everyday sonic experiences.
- Assisted in facilitating group discussions on user needs and participatory design, contributing to the refinement of design goals.

Teaching Assistant Sound Design and Composition Spring 2024

- Assisted in course delivery for undergraduate students; guided software use including Max/MSP, FMOD, and Reaper for designing immersive soundscapes.
- Designed and graded assignments on spatial sound design, mixing techniques, and interactive media projects.

Teaching Assistant Experiential Design Studio Fall 2023

- Supported hands-on workshops exploring human perception, interaction design, and multimodal feedback systems.
- Provided technical support and critique for student projects involving sensory augmentation and embodied interaction.

Technical Skills

- **Programming Languages:** Python (Pytorch, LangChain), C++, C#, MATLAB
- **Large Model Tools:** Fine-tuning, llama.cpp quantization deployment, Prompt engineering, RAG system construction, Dify rapid development
- **Other Skills:** Fusion 360, Blender, Unity 3D, FMOD, Max/MSP, Wwise, Figma, Xmind, Axure, PS, AI, AU, PR

Student Activities & Honors

- Served as Officer and Minister of Training Department in CSU Student Psychological Association
  - Organized an autumn mountain hiking event
  - Organized a mental health scenario drama competition
  - Conducted training for psychological committee members
  - Accompanied and guided multiple students to seek help from professional psychological counselors
- 2020 CSU Outstanding Student Cadre (Psychological Association)
- SUSTech Graduate Academic First-Class Scholarship.