

蔡秉叡 Ray Tsai

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Research & Product Focus

Multimodal human-computer interaction, sports coaching technology and voice AI. Combines basketball tactical knowledge, study design and product development to explore how personalized audio can support learning and real-world practice.

Education

National Taiwan University (NTU)

Feb 2026 - Present

M.S. student, Computer Science and Information Engineering, Artificial Intelligence Program

- HCI Lab, advised by [Prof. Mike Y. Chen](#); multimodal interaction, emotional voice and AR/VR interfaces.
- Spring 2026 GPA: **4.04/4.3** (15 credits). A+ in Multimodal HCI, Natural Language Processing, Artificial Intelligence, and Web Programming; additional coursework in Big Data Systems.

National Yang Ming Chiao Tung University (NYCU)

Sep 2021 - Dec 2025

B.S. in Electrophysics

- GPA: **4.1/4.3 over the final four semesters**. Graduate-level coursework: Machine Learning for Signal Processing (A+), Speech Signal Processing (A+), Deep Learning (A), and AI and Law (A+).

Research Manuscript Under Review

CoachCast - Player-Specific Audio for Basketball Practice

2026

Coauthor / Submitted to ACM CHI 2027; under review

- Contributed basketball tactical guidance and recommendations, experimental design, and data annotation to a study of concurrent, player-specific audio guidance during coach-led team practice.
- The project examines how personalized audio supports coordinated player actions alongside team-wide coaching, including trade-offs around guidance timing and player autonomy.

International Entrepreneurship Experience

NTU Silicon Valley Exploration Program

Jul - Aug 2026

Selected participant, inaugural 15-student cohort / San Francisco Bay Area, USA

- Completed seven weeks of startup exploration, industry visits and founder exchanges; presented product progress and reflections through weekly NTU Day sessions at Startup Island TAIWAN.
- Brought hands-on product feedback to IrisGo's cofounder and CTO: reproduced a Windows integration detection issue and narrowed likely causes to environment, executable detection and launch behavior.
- Discussed creator voice-generation workflows with Influenxio's founder; translated ecosystem feedback into Echo's language-learning direction and a subsequent expressive-voice editing prototype.
- Presented at Pre-Demo Day and developed MedBuddy for AI Fund's Engineer in Residence Build Challenge; continued product development and professional relationships after returning to Taiwan.

Selected Products

Mirror - AI Speech Coach

Apr 2026 - Present

Solo Founder / App Store release; 2026 NTU AI Builders Challenge entry

- Built an end-to-end coaching app that analyzes spoken answers and replays revised responses in the user's cloned voice, supporting Traditional Chinese, English and Japanese.
- Implemented voice calibration, streaming TTS, mock interviews and onboarding with Expo/React Native, Next.js and Supabase.
- Reached **718 organic signups**; shipped voice calibration, practice and feedback as a complete mobile learning workflow.

Selected Products (continued)

Echo - Contextual Language Learning

Jul 2026 - Present

Cofounder & Product Developer

- Built a podcast-learning prototype linking playback and transcripts with vocabulary capture and replay; uses rewind behavior as a signal for comprehension support and follow-up shadowing practice.
- Lead product development with a cofounder (NTU Information Management), who handles native Swift, Dynamic Island, system playback controls and practice cards.
- Exploring browser-extension workflows for learning from video and other media beyond podcasts; developing Echo through NTU entrepreneurship coursework.

MedBuddy - Medication-Care Prototype

Jul 2026

AI Fund Engineer in Residence Build Challenge submission

- Delivered a web dashboard and LINE-based care prototype during a 48-hour build challenge, connecting older adults and family caregivers; collaborated on LINE transport and reminder scheduling.
- Separated deterministic medication-rule verdicts from AI explanations and documented rule provenance. Project validation recorded **316 passing tests**; prototype has not undergone clinical validation.

Emotional Voice - Creator Voice Editing

Sep 2026 - Present

Independent Developer / Single-user local prototype

- Built a take-comparison workspace with manual and AI-assisted editing, change previews, undo, candidate listening and WAV export; **11 integration tests** and desktop/mobile checks passed.
- Compared English, Chinese and mixed-language voice-clone recordings through controlled generation and exploratory listening. Investigating creator advertising workflows informed by discussions with Influenxio.

Research Experience

Research Assistant (Part-time), Academia Sinica

Jun 2025 - Mar 2026

CKIP Lab, Institute of Information Science / Dr. Wei-Yun Ma

- Worked on multimodal language models and emotion-aware speech generation; contributed progressive SpecAugment scheduling and dialect-aware conditioning to the 2025 Formosa Speech Workshop Challenge team's low-resource Hakka ASR work.
- Surveyed Kimi-Audio for joint emotion recognition and controllable speech generation.

Research Assistant, National Tsing Hua University

Mar 2023 - Jul 2025

Institute of Learning Sciences & Technologies

- Co-developed a multimodal AI picture-book platform combining speech synthesis and image generation for language learning and cognitive therapy; taught 12 hours per semester of generative AI and n8n/LangChain workshops.

Shadow Your Perfect Self

May - Jun 2026

NTU Multimodal HCI course research project

- Built and evaluated a three-condition self-voice shadowing platform with 12 participants; observed preference for self-voice models, while objective measures did not establish pronunciation gains.

Athletics, Leadership & Service

- **NTU Varsity Basketball Team, Forward** (Fall 2026 - Present): joined this semester; registered for the 2027 北市大盃 tournament.
- **C-Level Basketball Coaching License (Taiwan)**: certified basketball coach.
- **NTU Creativity and Entrepreneurship Program, 19th cohort** (2026); selected for High-Tech Entrepreneurship and Operations, a 12-student course (Fall 2026).
- **Public Relations Officer, NYCU Electrophysics Student Association** (2022-2023): hosted 9 career seminars with 700+ total attendees and speakers from semiconductor and photonics companies.
- **Awards**: Runner-Up, Law Broker GPT PLUS+ AI Competition (Jan 2024); Honorable Mention, 美術竹梅 Hackathon (2023).
- **ITRI Research Intern** (Oct 2022 - Jun 2023): Python tools for automated data collection. **DuPont Taiwan IT Intern**: corporate IT workshops and network maintenance.