

# TSAI, KUEI-YU

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## WORK EXPERIENCES

### System Engineer

Foxconn Industrial Internet - Houston, Texas, United States

06/2025 - Present

- Migrated legacy PHP server applications to the CodeIgniter 3 framework, delivering responsive, modular web interfaces that improved maintainability and user experience.
- Developed centralized portals for user management and Microsoft 365 license automation, enabling enhanced visibility and delegated provisioning across regional IT teams.
- Designed and implemented CI/CD pipelines with Docker to streamline deployment for test environment and improve development efficiency.
- Architected and optimized MySQL database schemas, with automated data refresh and dynamic dashboards for reporting.
- Automated user management and Microsoft 365 license assignment workflows leveraging Active Directory, PowerShell, and PHP frameworks, significantly improving operational efficiency.

### Full Stack Developer

05/2023 - 08/2024

ELITE English Language Institute of Testing Education - Taipei, Taiwan

- Collaborated on Figma to create cohesive website content and server.
- Developed and maintained the website full stack using WordPress, PHP, and JavaScript API.
- Integrated third-party web services and achieved a 50% cost reduction in web development.

### Intern, Product Management (Tech)

03/2022 - 01/2023

Shopee Pte. Ltd. - Taipei, Taiwan

- Provided insights for user-friendly product development.
- Created Product Requirement Documents and test scripts.
- Managed databases with PostgreSQL and implemented automated testing with Cypress and Appium.
- Tested Android applications using Android Studio.

## RESEARCH EXPERIENCES

### Customer Service Audio Analyzer

02/2025

- Built the prompt compilation engine to transform audio transcription and evaluation metrics into structured prompts.
- Designed the LLM evaluation flow and output integration logic to assess agent performance.
- Created the frontend architecture and developed the analytics dashboard in React.
- Implemented metric-based trend graph generation and employee-specific analysis filters with statistical breakdowns.
- Led the full-stack integration, coordinating backend services, WebSocket real-time communications, and frontend dynamic updates to ensure system reliability.

### Sports Semantic Action Search System

12/2024

- Developed a semantic search engine enabling users to query sports actions and retrieve timestamped video segments.
- Implemented action detection and classification using YOLOv11 to accurately identify 33 Olympic sports actions, achieving 84.49% Top-1 accuracy and 94.91% Top-5 accuracy.
- Designed and built a scalable database schema for indexing annotated video segments, including action labels, timestamps, and metadata, to support fast and precise video retrieval.
- Optimized system performance by mitigating action misclassification through threshold optimization and annotation consistency strategies.
- Enhanced user experience by implementing seamless results, metadata display, and playback of selected video segments.

### Predicting NVIDIA Stock Prices Trends with Recurrent Neural Networks

04/2024

- Developed a unique RNN model from scratch, emphasizing understanding of mathematical and algorithmic principles.
- Collected and preprocessed daily stock prices, including normalization for effective modeling.
- Visualized results showing training and validation losses, and RMSE, illustrating model convergence.
- Provided recommendations for model optimization, including optimal layer configurations, monitoring training progress, and further experimentation with hyperparameters.
- Contributed to the understanding and application of RNNs in financial forecasting and sequential data analysis.

### Hide & Survive

02/2024

- Designed a hide and seek game with Virtual Reality in mobile development.
- Collaborated with UI/UX designers to create an intuitive user interface.
- Implemented Physically Based Rendering techniques using C# and JavaScript within Unity3D.
- Using Photon to create a multiplayer game mode.

### Two Hands, Two Touchpads: Optimizing Text Entry on Televisions

12/2023

- Proposed touch-based controllers at UTD for virtual on-screen keyboards to enhance interaction.
- Utilized drag-based touch interactions on a traditional keyboard layout for a balance between learnability and efficiency.
- Demonstrated fluent single-motion key selection to reduce the learning curve, serving as a viable substitute for existing remote-based input techniques.
- Conducted a user study comparing input methods, including TV remote, single cursor, and dual cursor.
- Comparative analysis highlighted distinctions in user preferences, emphasizing factors like ease of use, input speed, error rate, learnability, and personal preference.

### Intelligent Tutoring System of Piano

01/2022

- Created an innovative web project at NCCU, focused on enhancing music learning through AI integration.
- Conducted an investigation into existing Intelligent Tutoring Systems for music education, resulting in a cutting-edge smart piano tutoring system with gamified elements.
- Developed course materials and guidelines using advanced algorithms like Elo Rating Algorithm and dynamic programming.
- Leveraged JavaScript and the Web MIDI API for an interactive user interface, resulting in a 95% improvement rate.

## EDUCATION

### The University of Texas at Dallas - Richardson, Texas, United States

08/2023 - 05/2025

M.S. in Computer Science, specialized in Interactive Computing

### National Chengchi University - Taipei, Taiwan

09/2018 - 06/2022

B.S. in Computer Science

## CERTIFICATES

### Collegiate Programming Examination

12/2021

ICPC - ACM International Collegiate Programming Contest

## SKILLS

Human-Computer Interaction Development

C#, JavaScript, Python, Unity3D

Full Stack Development

Node.js, React, Flask, PHP, CodeIgniter, Wordpress

Test Development

TypeScript, Jest, Cypress, Appium

Other Programming Languages

C/C++, SQL

Software Proficiency

Git, Docker, Figma, Xcode, Android Studio