Tsung-Min (Vincent) Pai

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EDUCATION

Electrical Engineering, National Taiwan University (NTU) — Taipei, Taiwan
B.S. in Engineering — *Sep 2021 - Present*

- Last-60-credit GPA: 3.87/4.0, AI/ML Related GPA: 4.0/4.0
- **AI/ML Related Courses:** *Machine Learning, *Generative Artificial Intelligence, Foundation of Artificial Intelligence, Data Science, Data Visualization, Data Analysis and Machine Learning (* graduate-level)
- **CS Related Courses:** *Decentralized Finance, Wireless and Mobile Networking, Computer Networks, Network and Multimedia, Data Structure, Algorithms, Differential Equation, Linear Algebra, Discrete Mathematics... (* graduate-level)

Bioenvironmental System Engineering, National Taiwan University (NTU) — Taipei, Taiwan
B.S. in Engineering — *Sep 2020 - Jun 2021*

- **Dean's List Award**: 2020 Fall (**Top 5%**), Overall Ranking: **1/51** (**Top 1%**)

WORK EXPERIENCE

LOGOLO — New Westminster, Canada
AI Engineer | Contractor, Remote — *Sep 2025 - Present*

- Developed an **AI grading system** for national legal examinations, providing real-time feedback with 95% accuracy.
- Designed a parallelized architecture that accelerated the grading process by 90% over manual methods.

Genibuilder — Taipei, Taiwan
Founding AI Engineer | Full Time — *Sep 2024 - Aug 2025*

- Engineered a **conversational AI agent** to replace aesthetic clinic consultants, automating the advisory process for real-time response and reducing client operational costs by 80%.
- Utilized a multi-agent architecture with the DSPy concurrent framework, RAG, MongoDB, and context engineering.
- Designed an AI system realistically **simulating user-product interactions**, reducing manual validation time by over 80%.
- Developed an AI-powered data extraction pipeline to automatically deliver authentic client chat logs for the R&D team.

Compal Electronics — Taipei, Taiwan
AI Engineer | Intern — *Jul 2024 - Aug 2024*

- Conducted research about knowledge graph, RAG, LLM agent, LLM fine-tuning for **product improvement**.

PUBLICATIONS & CONFERENCE EXPERIENCE

- **Tsung-Min Pai**, Jui-I Wang, Li-Chun Lu, Shao-Hua Sun, Hung-Yi Lee, Kai-Wei Chang, "*BILLY: Steering Large Language Models via Merging Persona Vectors for Creative Generation*", **EACL 2026, Citation 2.**
- Chien-Yu Huang, ..., **Tsung-Min Pai**, ..., Hung-Yi Lee, "*Dynamic-SUPERB Phase-2: A Collaboratively Expanding Benchmark for Measuring the Capabilities of Spoken Language Models with 180 Tasks*", **ICLR 2025. Citation 49.**
- Li-Chun Lu*, Shou-Jen Chen*, **Tsung-Min Pai**, Chan-Hung Yu, Hung-Yi Lee, Shao-Hua Sun, "*LLM Discussion: Enhancing the Creativity of Large Language Models via Discussion Framework and Role-Play*", **COLM 2024. Citation 81.**
- **Reviewer**, International World Wide Web Conference (**WWW**) **2025**
- **Volunteer**, Asian Conference on Machine Learning (**ACML**) **2025**

RESEARCH EXPERIENCE

Speech Processing and Machine Learning Laboratory (SPMLLab), NTU — Taipei, Taiwan
*Undergraduate Researcher | Advisor: **Prof. Hung-Yi Lee*** — *Aug 2023 - Present*

- Introduced BILLY, merging persona vectors of LLMs to enhance the creativity and **replace discussion of multi-LLM systems in smaller LLMs**. Boosting Originality by 15% and reducing the cost by 95% compared to the multi-agent baseline. (Co-advised by *Prof. Shao-Hua Sun*)
- Contributed the ***Covid19CoughAudioClassification*** task to the Dynamic-SUPERB benchmark by devising and preprocessing a novel dataset for evaluating universal speech models.

Robot Learning Laboratory (RLLab), NTU Taipei, Taiwan
Undergraduate Researcher | Advisor: ***Prof. Shao-Hua Sun*** *Nov 2023 - Oct 2024*

- Developed a **multi-agent discussion framework** utilizing role-play that boosted LLM creativity scores by 20% over existing methods. (Co-advised by *Prof. Hung-Yi Lee*)
- Designed an **LLM creativity benchmark** with 0.7 human-level correlation, validated on 1,400+ text generations.

Advanced Internet Technologies and Services Laboratory, IIS, Academia Sinica Taipei, Taiwan
Research Intern | Principal Investigator: ***Dr. Meng-Chang Chen*** *Jul 2023 - Mar 2024*

- Trained GraphSAGE, GCN, and GAT models to **detect malicious behaviors** in Windows system log with about 83% recall.
- Trained the Trans Family and SecureBERT models to generate the embedding of the knowledge graph for classification.

Wireless and Mobile Networking Laboratory (WMNLab), NTU Taipei, Taiwan
Undergraduate Researcher | Advisor: ***Prof. Hung-Yu Wei*** *Feb 2023 - Nov 2023*

- Utilized RNN, CatBoost, and XGBoost for the prediction and classification of **mobile device handovers**.
- Provided the core dataset for classification models of handovers through live UDP protocol experiments on the MRT.

PROJECTS

EltAI Engine Taipei, Taiwan
Project Leader *Oct 2024*

- Engineered an LLM agent for ELTA TV, powered by **multi-modal RAG** to deliver real-time sports game analysis, multilingual interaction, and result prediction capabilities for enhanced user experience.
- Achieved a spot in the **Top 10 out of 836** teams and won the Corporate Challenge Award in GenAI Stars 2024 Hackathon.

Texas Hold'em AI Taipei, Taiwan
Individual Developer *May 2024*

- Engineered a Texas Hold'em AI using a multi-threaded C++ engine to calculate precise, **real-time win probabilities** through exhaustive enumeration post-flop.
- Conducted comparative analyses of paradigms including **Monte Carlo simulation, Q-learning, DQN, and MCCFR**.

Exchange Student Matching Platform Taipei, Taiwan
Project Leader *May 2024*

- Developed a comprehensive **exchange student matching platform**, integrating robust user authentication, profile management, and multi-conditional filtering capabilities.
- Implemented a **matching algorithm with KNN** for personalized recommendations and mutual friend connections.

TEACHING EXPERIENCE

Introduction to Generative AI, NTU (Course Webpage) Taipei, Taiwan
Teaching Assistant (TA) *Sep 2024 - Aug 2025*

- Collaborated with 30+ TAs to manage a class of over 1,000 students and 1,000 auditors.
- Designed and graded a coursework related to token importance and LLM interpretation with two other TAs.
- Contributed to a published paper in **EMNLP 2024**

EXTRACURRICULAR ACTIVITIES

GenAI Stars 2024 Hackathon, High Distinction Award (Top 10 of 836 Teams) Taipei, Taiwan
Team Leader *Oct 2024*

Department Basketball Team, NTUEE Taipei, Taiwan
Vice Captain / Coach / Team Member *Sep 2021 - Aug 2025*

School Basketball Team, NTU Taipei, Taiwan
Team Member *Sep 2020 - Aug 2021*

SKILLS

Spoken Languages: Chinese (Native), English (Fluent, TOEFL: R:27 / L:25 / S:24 / W:26)

Programming Languages: Python, C++, Golang, HTML / CSS, Matlab, JavaScript, Verilog

Develop Tools: Pytorch, Scikit-Learn, LangChain, LlamaIndex, GCP, CICD, Git, n8n, MongoDB, Redis, PSpice