Chi-An (Oscar) Fu

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https://unabashed0501.github.io/oscarfu-portfolio/

Education

National Taiwan University (NTU) **Sept. 2022 – Jan. 2026**

Bachelor of Science in Electrical Engineering, GPA: 3.92/4.3, Last 60: 4.12/4.3 *Taipei, Taiwan*

National Yang-Ming Chao-Tung University (NYCU) **Sept. 2021 – Jun. 2022**

Bachelor of Science in Electronics and Electrical Engineering, GPA: 3.99/4.3 *Hsinchu, Taiwan*

Publications

[1] **Chi-An Fu**, Chu-Jun Peng, Hsin-Yu Huang, I-Bin Liao, Yung-Hui Li, Wen-Huang Cheng (2025). **AI Agents for Autonomous Driving: An Overview**. Accepted by **IEEE Consumer Electronics Magazine 2025 (Link).**

[2] *Ting-Chun Liu, *Ching-Yu Hsu, *Kuan-Yi Li, ***Chi-An Fu**, Hung-yi Lee (2025). **AEGIS : Automated Co-Evolutionary Framework for Guarding Prompt Injections Schema**. Under review at **ACL Rolling Review 2025 (Link).**

Research Experience

Summer Research Intern at Intelligent CAT Laboratory, UIUC **June 2025 – Present**

Advisor: Reyhaneh Jabbarvand (UIUC) *Remote*

- Developed a multi-stage LLM-based unit test generation pipeline for large codebases by decomposing projects into atomic functions and structuring generation into scenario planning, code synthesis, and batch validation.
- Achieved 30% higher branch coverage, and produced 50+ compilable unit tests, demonstrating scalable automation of software engineering workflows.

Undergraduate Researcher at AIMM Research Group, NTU **Sept. 2024 – Present**

Advisor: Wen-Huang Cheng (NTU) *Taipei, Taiwan*

- Authored a comprehensive survey on AI agents for autonomous driving, synthesizing insights from 100 papers to chart the field's evolution from rule-based systems to modern multi-modal and multi-agent frameworks.
- Proposed a structured taxonomy categorizing existing approaches into LLMs, MLLMs, single-agent, and multi-agent systems, analyzing their reasoning, planning, and tool-use capabilities.

Undergraduate Researcher at Media IC & System Laboratory, NTU **Feb. 2024 – Aug. 2025**

Advisor: Shao-Yi Chien (NTU) *Taipei, Taiwan*

- Designed and implemented a Post-Processing Engine with an integrated compression module and ping-pong buffer, improving data reuse efficiency and reducing off-chip bandwidth demand in deep neural network accelerators.

Undergraduate Researcher at SPML Laboratory, NTU **Sept. 2023 – Sept. 2025**

Advisor: Hung-Yi Lee (NTU) *Taipei, Taiwan*

- Proposed AEGIS, an automated co-evolutionary framework for guarding prompt injections, enabling attacker–defender prompt pairs to evolve autonomously via improved Textual Gradient Optimization (TGO+).
- Achieved SOTA performance on a real-world prompt injection dataset, improving attack success rate (ASR) by +0.26 (to 1.0) and true positive rate (TPR) by +0.23 (to 0.84) while maintaining a true negative rate (TNR) of 0.89.

Work Experience

Institute of Information Science, Academia Sinica **June 2025 - Present**

Research Assistant (Part-time) | ***NLPSA Laboratory*** | *Advisor: Lun-Wei Ku* *Taipei, Taiwan*

- Developed a PEFT-based framework for spatial-temporal video grounding that adaptively encodes visual-language cues across frames, boosting multimodal alignment and grounding precision, demonstrating consistent improvements on the HC-STVG benchmark.

PicCollage, Cardinal Blue Software **July 2024 - Feb. 2025**

Software Developer Intern | *Frontend/Backend Team* *Taipei, Taiwan*

- Developed and maintained the official **PicCollage** and **Picollage Company** websites, improving page load speed and supporting over 100K+ and 60K+ monthly active users respectively.
- Enhanced and extended the internal Content Management System (CMS), launching 12+ new content management features and streamlining API response times .
- Collaborated on **JingleFace**, an AI-powered Christmas campaign app that achieved 10K+ user interactions within weeks, delivering real-time Pixar-style image transformations through a fine-tuned diffusion model.

Teaching Experience

Teaching Assistant of Introduction to Generative AI, NTU **July 2025 – Dec. 2025**
Lecturer: Hung-Yi Lee (NTU) *Taipei, Taiwan*

- Assisted in curriculum development for 1500+ students, designed scalable assignments for diverse student levels.
- Collaborated to maintain JudgeBoi, an automated assignment evaluation platform, demonstrating initiative, effective communication, and commitment to large-course infrastructure.

Teaching Assistant of Machine Learning, NTU **Jan. 2025 – June 2025**
Lecturer: Hung-Yi Lee (NTU) *Taipei, Taiwan*

- Assisted in curriculum development for 500+ students, designed scalable assignments for diverse student levels.
- Collaborated to maintain JudgeBoi, an automated assignment evaluation platform, demonstrating initiative, effective communication, and commitment to large-course infrastructure.

Selected Projects

Finetune LLAVA on Autonomous Driving (ECCV 2024 Challenge) (GitHub) **Nov. 2024 - Dec. 2024**
CUDA, Flash Attention, Python

- We developed **PREVISION**, PRe-training Enhanced Versatile Integration of Semantics, Images, and Object Detection for Novel Corner Case Analysis in Autonomous Driving **(ECCV 2024 Challenge)**
- Designed an effective multimodal architecture, improving performance from 3.0 to 4.1, and achieved high BLEU scores.
- Constructed pre-training projectors for training and implemented multi-stage generation for inference.
- Utilized LoRA for efficient pre-training and fine-tuning, optimizing model adaptation.

Preference-Guided Meta-RL (GitHub) (Paper) **Nov. 2024 - Dec. 2024**
Gymnasium, PyTorch, NumPy

- Proposed a preference-guided Meta-RL framework to explicitly trade off task generalization and high adaptation efficiency across unseen tasks.
- Achieved 50% performance improvement over MAML on a customized PointMaze benchmark built on Gymnasium.
- Mitigated MAML's sample inefficiency and PEARL's limited generalization via preference-driven policy adaptation.

Leadership Experience

Minister of department of Industry-Academia **Sept. 2023 – Aug. 2024**
NTUEE Student Association *Taipei, Taiwan*

- Strengthened academia–industry connections by organizing recruitment and information sessions with companies including Amazon, Google, and CakeResume.
- Founded and led a 20-member Industry–Academia Study Group, coordinating interviews, group presentations, and discussions on course planning and industry trends.
- Created an Internship Map aggregating senior students' internship and full-time experiences to support departmental career planning.

Co-Founder & Lead **Oct. 2023 – Aug. 2024**
EEVOLUTION , NTU Leadership Program *Taipei, Taiwan*

- Founded and led **EEVOLUTION**, a student-driven industry engagement platform addressing gaps between engineering students and recruiters at NTUEE.
- Organized corporate workshops with companies including Line Taiwan and BenQ, covering open-source software, product development, and design thinking.
- Coordinated a corporate visit to Line Taiwan, providing students with firsthand exposure to real-world engineering and product development practices.
- Expanded to 112+ partner companies including TSMC, Amazon, and Google, impacting 1,000+ students and increasing departmental internship placements by 20 year-over-year.

Skills

Programming Languages: C/C++, Python (Pandas for data analysis), Git, Linux

Front-end: HTML5, CSS, Tailwind CSS, JavaScript/TypeScript, React, Next.js, Vue, Flutter

Back-end & Database: Node.js, Ruby on Rails, Flask, GraphQL, Google Firebase, MongoDB, SQL, Pinecone, Vercel

Cloud & DevOps: AWS (S3, Lambda), GCP (Cloud Run), Docker

ML / DL / RL: PyTorch, Stable-Baselines3, Gymnasium

Hardware & EDA Tools: SystemVerilog, Synopsys Design Compiler (DC NXT)