Po-Yun Cheng

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Research Interests: Human-AI Interaction in Software Engineering, Program Comprehension, Code Review, Responsible AI-Assisted Software Development

Education

Sep. 2022–Jun. 2026 **B.S. in Computer Science and Information Engineering** (GPA 3.5/4.3), *National Taiwan University*, Taipei, Taiwan

- Exchange student, *University of California, Merced* (Fall 2025).
- Relevant courses: Software Engineering*, Deep Learning*, Advanced Human-Computer Interaction*, Machine Learning. (*graduate level)

Research Experience

Feb. 2025–Jul. 2026 **Undergraduate Research Assistant**, Advisor: Prof. Jonathan Lee
Software Engineering Lab, National Taiwan University

- Led a three-person team on automated code review; won the Best Poster Paper Award at a software engineering conference (TCSE 2026) [poster].
- Designed a stage-based multi-agent code review framework (interpretation, planning, computation, summary) combining static analysis and project-context RAG. On real open-source PRs, the framework improved BERTScore F1 by 43% over CodeRabbit and 16% over GitHub Copilot, at 96% lower cost.
- Diagnosed vocabulary mismatch in embedding-based Java retrieval and fixed it with AST-derived summary enrichment, enabling natural language queries to retrieve code snippets.

Apr. 2024–Oct. 2024 **Undergraduate Research Assistant**, Advisor: Prof. Mike Chen
Human-Computer Interaction Lab, National Taiwan University

- Designed the formative study and questionnaire (n=16) comparing VR headset use standing vs. lying down; found supine posture reduced head rotation range by 50% horizontally and 45% vertically, defining the actuation design and target ranges.
- Built the Python analysis pipeline, applying Wilcoxon signed-rank tests and Generalized Linear Mixed Models to repeated-measures data.
- Analyzed Likert-scale outcomes (subjective effort, VR sickness, preference) for the summative evaluation and produced statistical figures for the resulting CHI '25 paper.

Publications

1. Wu, E.-H., **Cheng, Po-Yun**, Hsu, C.-W., Han, C. H., Lee, P. C., Fan, C.-A., Kuo, Y. C., Hu, K.-J., Chen, Y. & Chen, M. Y. *HeadTurner: Enhancing Viewing Range and Comfort of using Virtual and Mixed-Reality Headsets while Lying Down via Assisted Shoulder and Head Actuation* in *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (Association for Computing Machinery, 2025). https://doi.org/10.1145/3706598.3714214.

Presentations

1. **Cheng, Po-Yun**, Lok, H. P.-H. & Huang, C.-C. *Calibrating Autonomy: A Risk-Based Framework for AI Autonomy and Human Oversight in Insurance.* Abstract submitted to the Joint Colloquium of the International Actuarial Association Sections (JoCo 2027). Luxembourg, May 2027.

2. **Cheng, Po-Yun**, Lee, K.-Y., Zhang, C.-W. & Lee, J. *Automated Code Review Using a Multi-LLMs Framework.* Poster presented at the 22nd Taiwan Conference on Software Engineering (TCSE 2026). **Best Poster Paper Award**. National Chin-Yi University of Technology, Taichung, Taiwan, July 2026. https://tcse2026.seat.org.tw/tcse2026-recap.

Work Experience

Feb. 2026–Present **AI Research Intern**, Manager: Dr. Chiao-Ching Huang
AI Solution Center, Cathay Life Insurance

- Developing a framework to evaluate AI autonomy in insurance workflows, combining process models, risk estimates, and human factors to support consistent, explainable decisions.
- Assessed emerging AI technology for company adoption, including local LLM deployment, quantization, and decision models, through literature reviews and empirical studies.
- Designed an agentic system that tracks industry trends across 50+ sources, using a MapReduce-style pipeline to balance scale and analysis accuracy; used by 70+ employees.

Projects

Fall 2025 **Gesture-Based Pointer Control System and Usability Evaluation**
UC Merced EECS 255: Advanced Human-Computer Interaction course project [github]

- Built an end-to-end touchless pointer system that maps palm location to cursor position and thumb–finger pinch dynamics to click and drag events.
- Designed three tasks (drag-drop, menu-select, and keyboard-input) to simulate the most frequent desktop interactions.
- Ran a counterbalanced within-subject study (Latin square, NASA-TLX + SUS), showing mid-air gesture input underperformed compared to a touchpad, attributing the difference to inter-user gesture variability and sustained-elevation fatigue.

Fall 2025 **Graph–Temporal Convolutional Network for Real-Time Gesture Recognition**
UC Merced EECS 242: Deep Learning course project [github]

- Proposed GTCN, a causal graph-convolutional + dilated temporal-convolutional model for frame-wise dynamic hand gesture recognition on the SHREC'21 dataset.
- Conducted a systematic ablation over 10 architectural variants (window length, spatial/temporal pooling, classifier design), isolating future context as a driver of temporal localization (Jaccard +19%) rather than detection accuracy.

Skills

Programming	Python, TypeScript/JavaScript, Java (Spring Framework), C
Tools	Git, Linux, Docker, Figma, LaTeX
Languages	Mandarin (native), English (TOEFL iBT 5.0/6.0; R=5, L=5, W=5, S=5)

If embedded links are not readable:

- Portfolio: https://bobcheng.xyz
- GitHub: https://github.com/Tanimal19
- Google Scholar: https://scholar.google.com/citations?user=YIzdSzsAAAAJ&hl=en