



Po-Ting Lin

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Research Interests

- Monte Carlo rendering & light transport
- Stereo vision & synthetic training data
- Statistical structure of rendering noise
- Structure discovery & gradient-free learning systems
- Computational models of memory

Education

2025 – **National Tainan Chia-Chi Senior High School**
Tainan, Taiwan

Skills

Experimental design
Problem framing
Research mentoring
Python / PyTorch
C / C++
Mitsuba 3
Blender Cycles
L^AT_EX
AI prompting
Model design

Languages

Mandarin Chinese	Native
English	TOEIC 910

Current Position

2025 – present **Independent Researcher**, Tainan
Statistics of path-traced data and stable measures of rendering difficulty; self-funded compute (approx. 1,000 GPU-hours).

Research Experience

- 2026 – **Transport-mechanism descriptor.** Discrete BSDF-lobe/bounce descriptor replacing unstable finite-sample variance; validated for adaptive sampling.
- 2026 **Cross-view variance correlation.** Independent-seed stereo variance fields correlate after disparity alignment ($\rho = 0.754$, 20 scenes); reproduced in a second renderer; learnable.
- 2025 – 2026 **PIDS: polarization-aided transparent-object stereo.** Full capture/calibration/rendering pipeline; 3 architectures, 45+ experiments; closed on quantitative grounds, logs public.
- 2025 – 2026 **Statistical masking in transparent-object data.** Glass-region noise variance $\approx 6.6\times$ non-glass; 66th National Science Fair.

Publications & Preprints

- Lin, P.-T. **(2026)** A Stable Transport-Mechanism Descriptor for Per-Pixel Rendering Difficulty. [arXiv:2608.16730](https://arxiv.org/abs/2608.16730). *CGF*, major revision (via PG 2026).
- Lin, P.-T. **(2026)** Independent Samples, Correlated Variance: A Learnable Cross-View Cue in Path-Traced Stereo Data. [arXiv:2606.25483](https://arxiv.org/abs/2606.25483). Under review, IVCNZ 2026.
- Lin, P.-T. **(2026)** How Much of Speech Recognition Must Be Learned? A Parameter-Free Analysis of Lexical Decoding. doi: [10.13140/RG.2.2.35863.33447](https://doi.org/10.13140/RG.2.2.35863.33447). Submitted, TAAI High School Session 2026.
- Lin, P.-T. **(2026)** Structural Crystallization: A Unified Computational Framework for Memory Formation, Persistence, and Modification. doi: [10.21203/rs.3.rs-9387132/v3](https://doi.org/10.21203/rs.3.rs-9387132/v3).

Awards & Honors

- 2026 2nd place (Informatics), school round, National High School Math, Science & Informatics Competition.
- 2026 2nd place, YIF Youth Generative AI Hackathon.
- 2026 Honorable Mention (Informatics), 25th Macronix Science Awards.
- 2026 Excellence Award (Computer Science), 66th Southern Taiwan Regional Science Fair; advanced to Nationals.