

Chao Péter Yang

Machine Learning Researcher

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Machine learning researcher in LLM alignment, agentic systems, and structure-aware generative modeling. First-author at **NeurIPS 2025**, advised by Prof. Cynthia Rudin. Builds music generation models, preference-aligned language models (DPO/RLHF; sycophancy and agreement-bias mitigation) and reliable multi-agent systems, backed by 3 years deploying production ML in financial analytics. Have also served as review for top ML conferences such as NeurIPS and KDD.

EDUCATION

Yale University

Research M.S. in Computer Science (Thesis Track), GPA: TBD/4.0

New Haven, CT

Sep 2026 – May 2028

◆ **Full Scholarship + Stipend, GRE: 340/340**

◆ Advisors: Prof. Rex Ying, Prof. Hua Xu

Duke University

M.S. in Data Science, GPA: 3.98/4.0

Durham, NC

Aug 2024 – May 2026

◆ **MIDS Merit Scholarship (70%), Dean's Research Award**

◆ Advisors: Prof. Cynthia Rudin, Prof. Stephen Ni-Hahn, Prof. Brandon Fain

◆ Coursework: NLP, Statistical Modeling, Data Engineering, ML Theory & Algorithms, Probabilistic ML, Generative AI

University of Michigan – Ann Arbor

B.S. (Hon.) in Data Science and Mathematics, Minor in Music, GPA: 3.65/4.0

Ann Arbor, MI

Aug 2018 – May 2021

◆ **Highest Honors in Data Science** (one of two in department), **University Honors** (2019, 2021)

◆ Advisors: Prof. Edward Ionides, Prof. Daniel Forger

TECHNICAL SKILLS

Programming

Python, R, SQL, Rust, Scala, C++, JavaScript

ML Methods

LLMs, Transformers, Diffusion Models, GNNs, CNNs, LSTMs, Reinforcement Learning, RLHF, DPO, GRPO

ML Frameworks

PyTorch, Hugging Face (Transformers, TRL, PEFT/LoRA), scikit-learn, NumPy, Pandas, PySpark

Gen AI & Agents

LangGraph, ReAct & Multi-Agent Systems, Retrieval-Augmented Generation (RAG), Model Context Protocol (MCP), Amazon Bedrock, Langfuse

Data & Cloud

Apache Spark, Databricks, AWS, PostgreSQL, MongoDB

Evaluation

A/B Testing, Preference-Based Evaluation, LLM-as-a-Judge

Tooling & MLOps

Git, Docker, Weights & Biases, matplotlib, Tableau

RESEARCH & INDUSTRY EXPERIENCE

Amazon.com, Inc. – Amazon Robotics

Data Scientist Intern

Boston, MA

May 2025 – Aug 2025

◆ Researched and built an **AI agent** for warehouse root-cause investigation that integrates multiple data sources and MCP servers, cutting average troubleshooting time from several days to **2.5 minutes** at a **75% success rate**.

◆ Built a reusable agentic framework on **LangGraph** and **Amazon Bedrock** that standardized internal agent development and shortened the path from prototype to deployment.

◆ Engineered a production evaluation pipeline for large-scale agent benchmarking using **LLM-as-a-Judge** with Langfuse, enabling rapid, repeatable performance measurement.

Duke University – Department of Computer Science

Research Assistant, advised by Prof. Brandon Fain

Durham, NC

Aug 2025 – Present

◆ Audited **sycophancy at every post-training stage** of open-recipe LLMs (**OLMo 3**, **Tülu 3**, **SmolLM3**), showing it is largely introduced by SFT rather than DPO; first-author draft targeting **FAccT 2027**.

◆ Built **sycotrace**, an interpretability pipeline that extracts and steers a sycophancy direction in activation space (persona vectors, CAA) and scores training data along it; found the direction already present in a **pretraining-only** 3B model.

◆ Developed **PrefAug**, an audited preference-data augmentation pipeline, with controlled **TRL DPO/LoRA** ablations on OLMo-3 and Qwen3.5-9B; engineered the full **PyTorch/SLURM** stack with LLM-judge evaluation and W&B logging.

Duke University – Interpretable Machine Learning Lab

Research Assistant, advised by Prof. Cynthia Rudin and Dr. Stephen Ni-Hahn

Durham, NC

Aug 2024 – Present

- ◆ Built **ProGress**, a structured symbolic music generator combining **discrete diffusion** with a knowledge-based probabilistic model; a 45-subject study beat baselines on quality with only ~3M parameters. *Accepted to **NeurIPS 2025***.
- ◆ Implemented a custom **DiffPool** for a heterogeneous **GNN** used in musical analysis (PyTorch), reducing validation cross-entropy loss by **60%** via architecture and hyperparameter tuning.
- ◆ Developed a **Group Relative Policy Optimization (GRPO)** algorithm over a **Graph Neural Network** to bring **RLHF** to automated, personalized musical analysis.

Curinos, Inc. (Informa PLC subsidiary) – Banking Consulting

Chicago, IL

Senior Data Scientist, Modeling Research

Aug 2021 – June 2024

- ◆ Researched and developed novel, industry-grade **nonlinear elasticity models** for **Asset–Liability Management (ALM)**, improving out-of-sample R^2 over legacy models by $\approx 12\%$ across bank and credit-union portfolios.
- ◆ Led an ML-engineering team migrating the legacy modeling pipeline from Cloudera to **Databricks**—coordinating testing, promotion, and release across teams—saving **\$100k+ annually** and cutting average data-processing time by **30%**; recognized at a company-wide town hall.
- ◆ Tuned hierarchical nonlinear price-elasticity models en masse for major US banks (10,000+ segments each), improving AIC and R^2 with markedly higher convergence rates.

SELECTED PUBLICATIONS & SUBMISSIONS

- ◆ **Chao Péter Yang**, Cynthia Rudin, Simon Mak, Yue Jiang, Stephen Ni-Hahn. *Getting Motif-ated: Controllable AI Compositions from Injected Motif Prompts*. Submitted to the 40th Conference on Neural Information Processing Systems, Creative AI Track (**NeurIPS2026**)
- ◆ Stephen Ni-Hahn*, **Chao Péter Yang***, Mingchen Ma, Cynthia Rudin, Simon Mak, Yue Jiang. *ProGress: Structured Music Generation via Graph Diffusion and Hierarchical Music Analysis*. *Proceedings of the 39th Conference on Neural Information Processing Systems, Creative AI Track (NeurIPS 2025)*. [\[paper\]](#)
- ◆ **Chao Péter Yang**, Zixiao Tan, Miaoli Jiang, Ziyu Zhou, Kaisen Yao, Michael Wu. *FinCom: Disagree-or-Commit Protocol for Financial Multi-Agent Systems*. Submitted to the ACM Conference on AI and Agentic Systems. *Under review*.
- ◆ Stephen Ni-Hahn, Jerry Zhu, **Chao Péter Yang**, et al. *SchenkerLink: Human-in-the-Loop Hierarchical Music Analysis with Uncertainty-Aware Graph Link Prediction*. Resubmitted to the ACM International Conference on Knowledge Discovery and Data Mining (**KDD 2027**). *Under review*.
- ◆ Undergraduate Honors Thesis: *The Classical–Romantic Dichotomy: A Machine Learning Approach*. University of Michigan. [\[paper\]](#)

In preparation:

- ◆ **Chao Péter Yang**, et al. *Mitigating Agreement Bias in LLMs via Contradictory-Knowledge Prompt Triads and Reinforcement Training*.

SELECTED PROJECTS

ClearPath Agent (Capstone)

Fall 2025

- ◆ Designed a multi-agent system (Supervisor + Research/Quant/Risk agents, **ReAct** coordination) to replicate human investment committees, improving reasoning accuracy and risk awareness by up to **+16%** over consensus baselines.
- ◆ Led a 6-member team across architecture, a 120-task evaluation, and paper authorship; awarded **Outstanding Capstone** (1 of 2) for bridging industry and academia.

ProfMatch (Graph-based RAG) [project link](#)

Fall 2024

- ◆ Built an LLM professor-recommendation system using **LightRAG** over a graph of faculty and research topics, with a Streamlit UI and NetworkX visualizations.

SanAssist (Healthcare Assistant Platform) [repo](#)

Fall 2024

- ◆ Fine-tuned **GPT-2 (LoRA)** on a domain corpus (val. perplexity 3.32); deployed with Docker to AWS ECR + App Runner and load-tested to **10k concurrent** users.

SERVICE

- ◆ Reviewer: NeurIPS 2025 AI4Music Workshop, NeurIPS 2026 AI4Music Workshop, KDD 2026 AI4Sciences Track, NeurIPS 2026 Creative AI Track, KDD 2027 AI4Sciences Track