Yufan Zhuang

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PROFILE

CS Ph.D. candidate at UC San Diego (expected Q4 2025) specializing in large language model research. My work spans continuous chain-of-thought reasoning, agentic learning, and long-context understanding, developed through research interns at Apple Siri, AMD GenAI, Meta Reality Labs, Microsoft Research, and two years at IBM Research prior to my doctoral studies. Research impact includes 10+ peer-reviewed publications in premier venues (ICLR, ACL, EMNLP, TMLR, ...), 350+ citations, multiple patents, and significant open-source contributions with 100+ GitHub stars and 10K+ Hugging Face downloads.

EDUCATION

University of California San Diego, La Jolla, CA 2021 - 2025 Q4 (exp)
PhD in Computer Science, Department of Computer Science & Engineering, Advisor: Prof. Jingbo Shang
Research Interests: Natural Language Processing, Large Language Models, Meta Learning

Columbia University, New York, NY 2018 - 2019
MS in Data Science, Data Science Institute, GPA: 3.96 / 4.00

Hong Kong Polytechnic University, Kowloon, HK 2014 - 2018
BSc with First Class Honors in Applied Mathematics, Minor in Computer Science, GPA: 4.00 / 4.00

EMPLOYMENT

Machine Learning Intern, Apple Siri 2025 Summer

- Leading research on agentic systems for next-generation personal mobile assistants
- Developing novel evaluation frameworks with expected top-tier conference publication and product integration

Research Scientist Intern, AMD GenAI 2024 - 2025

- Pioneered agentic reasoning systems for long context understanding, resulting in +14.7% on HELMET benchmark.
- First author paper published at ACL 2025 main conference (top-tier NLP venue)

Research Scientist Intern, Meta Reality Labs 2024 Summer

- Designed efficient VLMs for high-definition OCR, reducing inference latency by 50%, supporting native 2K resolution
- Pretrained Viper vision language models on Cambrian-7M, viper-mamba-7b and viper-jamba-52b, with 50K H100 hours

PhD Research Intern, Microsoft Research, Deep Learning Group 2023 Summer

- Pretrained MetaTree, a transformer tabular model over 1M+ datasets, surpassing classical decision tree algorithms
- First author paper published at TMLR, 100+ stars on github, 10K+ total downloads on Huggingface

Research Engineer, IBM T. J. Watson Research Center 2020 - 2021

- Explored neural methods to understand the logic structure of source code
- Published 8 papers and 4 patents (2 Global patents, 2 US patents)

Graduate Research Intern, IBM T. J. Watson Research Center 2019 Summer

- Designed and implemented framework for large scale data analysis
- Developed deep learning pipeline for vulnerability detection and localization

PUBLICATIONS

REASONING IN CONTINUOUS SPACE

Yufan Zhuang, Liyuan Liu, Chandan Singh, Jingbo Shang, and Jianfeng Gao. "Text Generation Beyond Discrete Token Sampling." *arXiv preprint arXiv:2505.14827*, 2025.

Yufan Zhuang, Chandan Singh, Liyuan Liu, Jingbo Shang, and Jianfeng Gao. "Vector-ICL: In-context Learning with Continuous Vector Representations." *ICLR*, 2025.

Yufan Zhuang, Liyuan Liu, Chandan Singh, Jingbo Shang, and Jianfeng Gao. "Learning a Decision Tree Algorithm with Transformers." *Transactions on Machine Learning Research*, 2024.

AGENTIC LEARNING & LONG-CONTEXT

Yufan Zhuang, Xiaodong Yu, Jialian Wu, Ximeng Sun, Ze Wang, Jiang Liu, Yusheng Su, Jingbo Shang, Zicheng Liu, Emad Barsoum. "Self-Taught Agentic Long Context Understanding." *ACL*, 2025.

Yufan Zhuang, Pierce Chuang, Yichao Lu, Abhay Harpale, Vikas Bhardwaj, and Jingbo Shang. "Viper: Open Mamba-based Vision-Language Models." *https://huggingface.co/ViperVLM*, 2024.

Yufan Zhuang, Zihan Wang, Fangbo Tao, Jingbo Shang. "WavSpA: Wavelet Space Attention for Boosting Transformers' Long Sequence Learning Ability." *NeurIPS UniReps: the First Workshop on Unifying Representations in Neural Models*, 2023.

TRUSTWORTHY MODEL EVALUATION

Feng Yao*, **Yufan Zhuang***, Zihao Sun, Sunan Xu, Animesh Kumar, Jingbo Shang. "Data Contamination Can Cross Language Barriers." *Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2024. (*equal contribution)

AI FOR SOFTWARE ENGINEERING

Sahil Suneja, **Yufan Zhuang**, Yunhui Zheng, Jim Laredo, Alessandro Morari, Udayan Khurana. "Incorporating Signal Awareness in Source Code Modeling: An Application to Vulnerability Detection." *ACM Transactions on Software Engineering and Methodology*, Vol. 32, No. 6, Article 145, pp 1–40, 2023.

Sahil Suneja, **Yufan Zhuang**, Yunhui Zheng, Jim Laredo, Alessandro Morari, Udayan Khurana. "Code Vulnerability Detection via Signal-Aware Learning." *IEEE 8th European Symposium on Security and Privacy (EuroS&P)*, 2023.

Yufan Zhuang, Sahil Suneja, Veronika Thost, Giacomo Domeniconi, Alessandro Morari, Jim Laredo. "Software Vulnerability Detection via Deep Learning over Disaggregated Code Graph Representation." *arXiv:2109.03341*, 2021.

Sahil Suneja, Yunhui Zheng, **Yufan Zhuang**, Alessandro Morari, Jim Laredo. "Towards Reliable AI for Source Code Understanding." *ACM Symposium on Cloud Computing (SOCC) Vision Track*, 2021.

Sahil Suneja, Yunhui Zheng, **Yufan Zhuang**, Alessandro Morari, Jim Laredo. "Data-Driven and SE-assisted AI Model Signal-Awareness Enhancement and Introspection." *arXiv:2111.05827*, 2021.

Sahil Suneja*, Yunhui Zheng*, **Yufan Zhuang***. "Probing Model Signal-Awareness via Prediction-Preserving Input Minimization." *ACM Foundations of Software Engineering (ESEC/FSE)*, 2021. (*equal contribution)

Luca Buratti, Saurabh Pujar, Mihaela Bornea, Scott McCarley, Yunhui Zheng, Gaetano Rossiello, Alessandro Morari, Jim Laredo, Veronika Thost, **Yufan Zhuang**, Giacomo Domeniconi. "Exploring Software Naturalness through Neural Language Models." *arXiv:2006.12641*, 2020.

Sahil Suneja, Yunhui Zheng, **Yufan Zhuang**, Jim Laredo, Alessandro Morari. "Learning to map source code to software vulnerability using code-as-a-graph." *arXiv:2006.08614*, 2019.

COMPUTATIONAL SOCIAL SCIENCE

Qiang Fu, **Yufan Zhuang**, Yushu Zhu, Xin Guo. "Sleeping Lion or Sick Man? Combining Computational Approaches to Deciphering Heterogeneous Images of Chinese in North America, 1978-2019." *Annals of the American Association of Geographers*, 2022.

Qiang Fu, **Yufan Zhuang**, Jiaxin Gu, Yushu Zhu, Xin Guo. "Agreeing to Disagree: Choosing among Topic-Modeling Methods." *Big Data Research*, 2020.

Qiang Fu, **Yufan Zhuang**, Jiaxin Gu, Yushu Zhu, Huihui Qin, Xin Guo. "Search for K: Assessing Five Topic-Modeling Approaches to 120,000 Canadian Articles." *BPOD workshop at IEEE International Conference on Big Data*, pp. 3640–3647, 2019.

PATENT

Sahil Suneja, **Yufan Zhuang**, Yunhui Zheng, Alessandro Morari, Jim Alain Laredo, "Artificial intelligence model learning introspection", US/WO Patent, No. US20230130781A1, 2023

Sahil Suneja, **Yufan Zhuang**, Yunhui Zheng, Alessandro Morari, Jim Alain Laredo, "Training data augmentation via program simplification", US/TW/WO Patent, No. US20230113733A1, 2023

Sahil Suneja, **Yufan Zhuang**, Yunhui Zheng, Alessandro Morari, Jim Alain Laredo, "Complexity based artificial intelligence model training", US/CN/JP Patent, No. US20230115723A1, 2023

Sahil Suneja, **Yufan Zhuang**, Yunhui Zheng, Alessandro Morari, Jim Alain Laredo, "Probing Model Signal Awareness", US Patent, No. US20220358400A1, 2023

PROFESSIONAL SERVICES

Reviewer: NeurIPS'25, ICLR'25, NeurIPS'24 (XAI), ICML'24, WWW'24, TMLR (Since 2024), NeurIPS'23 (UniReps), WWW'23, OOPSLA'21, TSE'21, AAAI'21, OOPSLA'20

Teaching Assistant: CSE 151A (W'25), CSE 150B (S'25), DSC 148 (W'24), DSC 258R (S'24), CSE 250A (F'24, F'23, F'22), CSE 251A (S'23), CSE 257 (W'23)

SELECTED ACCOMPLISHMENTS AND AWARDS

Jacobs School of Engineering Fellowship	2021
Department of Applied Mathematics Scholarship for Hall Residents	2017/18
The Hong Kong Polytechnic University (Eastern Canada) Association Scholarship	2017/18
The Hong Kong Polytechnic University Scholarship	2016/17
Honorable Mention, The Mathematical Contest in Modeling	2016
HKSAR Government Scholarship - Reaching Out Award	2015/16
Dean's List	2014/15, 2016/17, 2017/18
Second Prize in National Olympiad in Informatics	2011