

# CHENYUAN YANG

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## EDUCATION

### Carnegie Mellon University

Pittsburgh, PA, USA

#### Master of Science in Artificial Intelligence and Innovation

- Incoming Graduate Student (Fall 2026 Entry)

### Fudan University

Shanghai, China

#### Bachelor of Science in Computer Science and Technology

Sept.2022 - Expected Jun.2026

- **Cumulative GPA:** 94/100
- **Honors and Awards:** Fudan University Outstanding Student Scholarship: Second Prize (2024–2025); Third Prize (2023–2024, 2022–2023)

### University of California, Davis

Davis, CA, US

#### Exchange Program, Cumulative GPA: 4.0/4.0

Sept.2024 - Dec.2024

## RESEARCH OUTCOMES

- Bandarkar, L., Yang, C., Fayyaz, M., Hu, J., & Peng, N. (2025). Multilingual Routing in Mixture-of-Experts. *Accepted to the International Conference on Learning Representations (ICLR) 2026*. Available at <https://openreview.net/forum?id=ZoZR0x7tTD>
- Xing, S., Wang, S., Yang, C., Dai, X., & Ren, X. (2025). Lookahead Tree-Based Rollouts for Enhanced Trajectory-Level Exploration in Reinforcement Learning with Verifiable Rewards. *Accepted to the International Conference on Learning Representations (ICLR) 2026*. Available at <https://openreview.net/forum?id=4nLvUk8edu>
- Ye, J., Huang, C., Chen, Z., Fu, W., Yang, C., Yang, L., Wu, Y., Wang, P., Zhou, M., Yang, X., Gui, T., Zhang, Q., Shi, Z., Fan, J., & Huang, X. (2025). A Multi-Dimensional Constraint Framework for Evaluating and Improving Instruction Following in Large Language Models. arXiv preprint arXiv:2505.07591.

## RESEARCH EXPERIENCE

### Multilingual MoE Routing Analysis | UCLA PLUS Lab

Remote

#### Research Assistant; Supervisor: Prof. Nanyun (Violet) Peng at UCLA

Jun.2025 - Present

- Analyzed expert routing patterns of MoE large models on parallel corpora and evaluated training-free routing interventions that improved multilingual performance across 15+ languages.
- Developed a routing analysis framework for sparse MoE models by averaging softmax routing probabilities and designed an entropy-normalized JS divergence metric to quantify inter-language routing differences.
- Implemented soft and hard interventions (e.g., logit steering, force-activation/deactivation) by modifying router logits during forward propagation, with special handling for top-k=2 routing in certain models.
- Validated the method through experiments on two evaluation tasks and three models, consistently enhancing multilingual generalization by 1–2% when applied to intermediate layers.

### Tree-based Rollout Exploration for Trajectory Diversity | USC INK Lab

Remote

#### Research Assistant; Supervisor: Prof. Sean (Xiang) Ren at USC

Jul.2025 - Present

- Proposed a plug-and-play sampling strategy to explicitly promote trajectory-level diversity, accelerating policy learning by 131% on average and improving final pass@1 performance by 4.2% on both GRPO and DAPO across different reasoning tasks.
- Implemented a standardized answer normalization pipeline through prompt engineering with large language models (e.g., GPT, Gemini) to unify heterogeneous mathematical answer formats (e.g., fractions, radicals, symbolic expressions, multiple choices, etc.) into integer-based representations, facilitating consistent model training.
- Conducted comparative analyses using BLEU and ROUGE metrics to rigorously evaluate the behavior, advantages, and impact of the proposed method on answer diversity relative to baseline models.
- Performed detailed parameter tuning and optimization on base models such as Qwen3, identifying stable hyperparameter combinations and developing a robust baseline for evaluating the improved model's performance.

### Fudan University Natural Language Processing Group | Fudan NLP Lab

Shanghai, China

#### Research Assistant; Supervisor: Prof. Tao Gui at Fudan University

Jun.2024 - Jun.2025

- Architected a safety alignment module using PyTorch, implementing content filtering (keyword blacklists) and rule-guided reward scoring based on safety criteria to improve language models' instruction-following capabilities.
- Designed a multi-dimensional constraint framework for instruction evaluation, which comprises three constraint patterns, four major categories, and four difficulty levels. Built an automated instruction generation pipeline leveraging the framework to transform raw instructions into diverse, constraint-rich variants.
- Developed a robust, modular system with pattern-matching and rule-driven validators by implementing separate modules for different types of constraints and prioritizing rules to ensure accurate parsing.
- Implemented test-driven development to ensure the system remained correct, maintainable, and easily extendable, enabling accurate parsing of complex instructions and reliable evaluation across cases.

## PROFESSIONAL EXPERIENCE

### Bytedance

Shanghai, China

#### Data Governance Intern

Sept.2025 - Present

- Developed a Unified Data Taxonomy by analyzing TikTok backend assets through exploratory data analysis, feature extraction, and sample validation, and identified patterns and correlations to guide standardized recognition rules.
- Integrated algorithmic and LLM-based methods to optimize classification accuracy and recall, increasing classification capability coverage from 87% to 94% and improving classification performance (F1 score) from 92% to 95%, while supporting model enhancement and deployment through data pipeline construction.
- Defined asset selection rules and implemented an SDLC-based incremental labeling process, addressing cold-start challenges for new business domains through LLM-based reasoning and few-shot learning, enabling sustainable and lightweight tag updates.
- Designed the supporting analysis framework and applied business research and sample analysis to provide accurate references for automated recognition.

**Transwarp Technology (Shanghai) Co., Ltd**  
**Software Testing & Development Intern**

**Shanghai, China**  
**Dec.2024 - Mar.2025**

- Executed functional and performance testing for ArgoDB distributed database across Linux/Windows environments.
- Automated test case execution using Python scripts, covering 20+ core features including index management.
- Analyzed system performance under concurrent operations, identifying bottlenecks and providing actionable feedback to optimize database throughput and latency.
- Documented reproducible defect scenarios with JIRA issue tracking to resolve issues affecting multi-node consistency and fault tolerance.
- Assisted in test environment setup and CI/CD integration using Git and Docker to improve test efficiency and deployment reliability.

**SELECTED PROJECTS**

**THINKDRIVE Autonomous Driving and Digital Twin System** **Sept.2024 - Jun.2025**

**Web Front-end Developer | University Student Innovation & Entrepreneurship Development Program**

- Built core modules of digital twin web interface using modern JavaScript frameworks, implementing real-time vehicle status visualization and interactive controls.
- Optimized front-end architecture with modular design, enhancing code maintainability across 20+ reusable UI elements; developed data bridging solutions between browser clients and autonomous driving simulators using WebSocket APIs.
- Contributed to simulation platform development by creating configurable training scenario templates.
- **Adopted as a teaching tool in *Principles and Practice of Artificial Intelligence for Autonomous Driving*, an AI course at Fudan University.**

**Shanghai Library Open Data Competition** **Jun.2024 - Aug.2024**

**Web Front-end Developer & Team Leader**

- Developed award-winning cultural heritage platform with 3D building visualization and AI-powered historical Q&A system.
- Implemented responsive frontend using CSS grid layouts and dynamic data rendering (15+ interactive timeline modules).
- Built RAG pipeline integrating Shanghai Open Data APIs and custom vector database, improving semantic search relevance.
- **Won the Excellence & Popularity Award.**

**LEADERSHIP AND EXTRACURRICULAR EXPERIENCE**

**Class President of the Computer Science Undergraduates Class of 2022** **Sept.2023 - Present**

- Assisted the counselor in managing a class of 120 students, coordinating events such as spring outings, choir competitions, and class retrospective video production.
- Streamlined class operations, strengthening teacher-student connections, and fostering a cohesive environment.

**Math Tutor - Middle School Level** **Jul.2024 - Present**

- Provided one-on-one mathematics tutoring over 1.5 years, previewing new topics and designing targeted exercises.
- Guided the student to tackle mathematical problems using visual modeling, structured decomposition, and step-by-step reasoning frameworks, which led to sustained improvement in mathematical performance and transferable analytical skills.

**FISS (Fudan University Summer International Program) Buddy** **Jul.2024 - Aug.2024**

- Assisted exchange students by coordinating logistics and providing cultural guidance for a welcoming environment.

**Ceramic Art Association "Sunshine Home" Practice Activity** **Mar.2023**

- Guided individuals with intellectual disabilities in ceramic-making, fostering creativity, patience, and inclusivity.

**TECHNICAL SKILLS**

**Programming Languages:** C, C++, Python, R, Bash

**Front-end Frameworks:** Vue (HTML, JavaScript/TypeScript, CSS), React

**Database:** PostgreSQL

**Operating Systems:** Linux-based project development

**Hardware Design:** Designing hardware logic in Vivado and conducting simulation verification