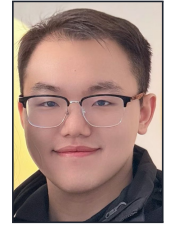


Zhiyuan Ouyang

East China Normal University / Shanghai Institute for Advanced Study | Year-2 Ph.D. Candidate
in Computational Mathematics

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Summary

My research centers on **generative modeling**, with a focus on Diffusion / Flow-Matching architectures and their mathematical foundations for faster and more controllable generation. I have end-to-end delivery capability across algorithm design, model training, and native deployment. On the systems side, I have hands-on experience in **large-scale distributed training**, including Slurm-based multi-node DDP scheduling, communication optimization, and inference acceleration with TensorRT / ONNX Runtime. I also build production-grade execution infrastructure for on-chain strategy engines, risk control, and stateful services.

Education

East China Normal University / Shanghai Institute for Advanced Study Ph.D. Candidate in Computational Mathematics
Shanghai, China

Advisor: Junchi Yan

Honors: National Scholarship for Doctoral Students (Top 1.5%)

Awards: Provincial First Prize, C/C++ Programming Contest for University Students (Top 5%)

Certificate: CDA Data Analyst

Research Interests: Generative Model Theory / Controllable Generation / Time Series Analysis / On-Chain Execution

Publications

Zhiyuan Ouyang (first author). Primal-Spectral Generative Modeling: Fast Analytical Generation via Pseudoinverse Lévy Inversion. *Accepted to ICML 2026 (CCF-A top-tier conference)*

Zhiyuan Ouyang (first author). A Novel Network for Resolving Subjective Masking Differences and Accurate Thyroid Nodule Diagnosis. *Published in Computational Biology and Chemistry (JCR Q2)*

Zhiyuan Ouyang (first author). Model Detection for Grey Forecasting Model with Polynomial Term. *Published in Communications in Statistics (JCR Q3)*

Zhiyuan Ouyang (first author). A Novel Grey Fractional Model Based on Model Averaging for Forecasting Time Series. *Published in Journal of Intelligent & Fuzzy Systems (JCR Q4)*

Projects

Generative Modeling in Characteristic-Function Space (Outstanding Ph.D. Student Project, ICML 2026) 📄
Nov 2025 – May 2026

- **Project:** Studied generative modeling through the evolution from primal data distributions to characteristic functions. Proposed the PriSpecNet architecture and a one-step (1-NFE) Pseudoinverse Lévy Inversion (PiLI) solver, turning generation into a closed-form analytical problem with theoretical convergence guarantees via spectral methods.
- **Results:** Unified generation and forecasting for time series. Reduced Context-FID by 50.0%, 41.5%, 80.6%, and 63.1% on Sines, Solar, ETTh, and Stock, respectively. On ImageNet 256×256, achieved 1.66 FID with only **26 Gflops**, delivering **170×** faster inference than conventional approaches and leading to a first-author paper at **ICML 2026**.

Controllable Video Generation Project (University-Industry Collaboration, Project Lead) 🛠️ **Annotation Tool**
Aug 2025 – Apr 2026

- **Project:** Led requirement alignment, milestone planning, and staged delivery for a trajectory-guided controllable video generation project. Built a private annotation tool and data pipeline, using Sapiens for keypoint pre-annotation with human correction to produce structured datasets covering trajectories, action classes, and text descriptions. Designed a trajectory-control scheme for WAN 2.2 I2V by encoding structured tracks as injectable conditioning signals.
- **Results:** Delivered a private database, annotation tooling, and a trajectory-conditioned generation algorithm based on both public and private datasets. Completed WAN 2.2 I2V deployment and workflow packaging in ComfyUI,

enabling end-to-end video generation along specified motion paths. The project was accepted and delivered at a total contract value of **RMB 350,000**.

Customized AIGC Models and Short-Video Generation Pipeline (Commercial Delivery, Project Lead) Sep 2023 – Sep 2024

- **Project:** Designed commercialization and delivery workflows for enterprise content generation and brand marketing. Built standardized model workflows covering data cleaning, LoRA fine-tuning, evaluation, inference deployment, and generation orchestration for product imagery and interior-design scenarios.
- **Results:** Established a one-click content production loop from image/text assets to marketing videos based on **Diffusion/Flow Matching**, **LoRA**, and short-video generation pipelines. Delivered **150+** customized models and ComfyUI workflows, substantially improving content production efficiency and business deployment for enterprise clients.

MimicPolymarket On-Chain Routing and Trading Engine (Independent Developer) **Engine** **Live Account** Feb 2026 – Present

- **Project:** Independently designed and developed an on-chain routing engine for Polymarket. Used deep-learning-based **Attention Factors** as the upstream signal layer, combining market prices, order book structure, smart-money trades, and event semantics into tradable factor and residual signals mapped to target positions. Built a concurrent multi-wallet execution framework compatible with EOA, Safe, and Deposit Wallet modes, with deep integration of relayer routing and the **POLY_1271** signing protocol.
- **Results:** Built a full trading loop from **Data API/CLOB** ingestion and signal generation to dynamic rebalancing and order execution. Implemented trader-level configurable risk-control matrices and an **Order Aggregation** engine for fragmented high-frequency Snipe/MEV signals. Combined MongoDB-backed lifecycle state persistence, serialized queues, and execution write-back into a low-latency, highly available, auditable production system, with a live cumulative return of **+182%**.

Industry Experience

Baizhixunlian Technology Co., Ltd. (Head of AIGC Department) Sep 2023 – Sep 2024

- **Generative Model R&D:** Led the construction of visual generation pipelines based on **ComfyUI** and **Diffusion/Flow Matching**. Applied LoRA/SFT and preference alignment to deliver highly controllable end-to-end solutions for vertical domains.
- **AI Engineering and Deployment:** Led AIGC infrastructure and model serving (Model-as-a-Service), covering model packaging, API encapsulation, and cloud inference deployment. Built GPU-based scheduling and task-queue mechanisms to support highly concurrent and highly available generation services.
- **Team Leadership:** Owned the technical roadmap and agile delivery process of the AI department. Provided enterprise consulting on AIGC adoption, established internal engineering standards, led technical training, and drove efficient cross-functional collaboration.

Technical Skills

Languages: **Python** for algorithm development and data analysis; **C++ / TypeScript** for high-performance inference and production engineering; highly efficient in AI-assisted coding workflows.

Modeling & Training: Proficient with **PyTorch** and **JAX** for deep learning and distributed training optimization; strong understanding of Diffusion / Flow-Matching models; experienced in SFT and LoRA for commercial deployment.

Systems & Architecture: Experienced in AIGC infrastructure and Model-as-a-Service deployment; familiar with GPU scheduling, API design, high-concurrency model serving, and workflow systems such as ComfyUI.

Data & Tooling: Skilled in large-scale multimodal data cleaning and synthesis; experienced in building automated annotation pipelines with vision foundation models such as Sapiens for high-quality fine-tuning and control-signal datasets.