

Chuyue Li

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Research Interest: RSI; Self-Evolving/Co-Evolving Agents; Agentic RL; for Video/Image/Game/Coding;

Education

University of Illinois Urbana-Champaign MSCS (Research Track)	2026.08 - 2028.06
University of California, Berkeley CS Junior <i>Exchange</i> GPA: 3.9/4.0	2024.08 - 2025.05
ShanghaiTech University CS <i>Undergrad</i> Major GPA 3.87/4.0	2022.9 - 2026.7

Internship Experience

Alibaba Qwen | Research Intern 2026.02-2026.08

Self-Evolving Agent for Cinematic-Grade Video Representation Learning
Visual Technology Department, AIGC Team Mentor: Jinpeng Yu, Jiaming Liu

- **First-Authored Paper Under Review:** AVA-Encoder: Towards Agent-Native Video Representation Learning.
- Developed a **self-evolving agentic auto-encoder** that learns editable, agent-native structured representations from cinematic-grade videos through reconstruction-based self-supervision, without ground-truth graphs or expert creation trajectories, supporting downstream creative video generation and editing.
- Built a **hierarchical agentic encoder** with video/shot/keyframe-level understanding and cross-level context injection; developed **fine-grained, confidence-aware visual feedback** to localize reconstruction errors and distill them into actionable **textual gradients** for autonomous self-improvement.
- Designed **gated dual-loop self-evolution** : an Outer Loop pseudo-trains transferable agent policies with a **replay-based Anti-Forgetting Gate**, while an Inner Loop performs test-time representation refinement with an **Anti-Degradation Gate**, preventing regressions during autonomous learning.
- Achieved **49.0% reconstruction fidelity(+20.7 pts)** over the strongest baseline; the self-evolved policy outperformed a human-engineered policy(45.8 vs. 44.4) with **over 70% fewer system-prompt tokens**, while dual-loop evolution improved 6.6 pts over the initial policy.

Tencent Hunyuan | Research Intern 2025.06-2025.11

Agentic RL for Long-Horizon Hierarchical Creative Planning and Tool Use
Multimodal Model Department, Visual Agent Team Mentor: Rongwei Quan

- **Accepted by CVPR 2026 Findings:** VisionCreator: A Native Visual-Generation Agentic Model with Understanding, Thinking, Planning and Creation.
- Developed a native multimodal agent for creative image/video generation (storytelling, commercials, music videos, education, VFX, and movies), enabling **long-horizon hierarchical creative planning, dynamic tool calling, and adaptive execution** across complex **20+ step trajectories**.
- Designed **two-stage Progressive Specialization Training (PST)** to balance general reasoning/tool-use capabilities with specialized creative planning, progressively shifting training toward visual creation while preventing catastrophic forgetting through general-data retention.
- Developed a **two-stage GRPO-based Agentic RL pipeline** for expensive, long-latency generation tools: Stage 1 uses **Virtual RL** in a 36-tool simulated environment to learn planning and tool-use policies without costly real-tool rollouts; Stage 2 adapts **online GRPO** for stable learning from real multimodal tool interactions.
- Designed **plan-driven trajectory rewards** combining expert-guided plan evaluation, tool-call validity, execution coherence, and goal achievement; integrated **confidence-aware VLM evaluation and visual self-reflection** to improve visual consistency and closed-loop creative execution.
- Improved pre-RL reward from **0.64 to 0.87** and accelerated RL convergence by **~50%**; achieved **+49% Overall Score** over the strongest PST baseline and a 3.42 human score vs. GPT-5's 3.19 and Gemini-2.5-Pro's 3.01.

Circle Cat Research Department | Research Intern USA 2025.2 - China 2026.02

LLM for Muti-level Coding Error Classification
Role: Project Leader, First Author Supervisor: Kazuma Hashimoto, Lingyu Gao

- **Accepted by NeurIPS 2026 TAE:** PyMETA: A Benchmark Dataset for Hierarchical Student Code Error Classification with Python-Interpreter-Based Labels
- Design a multi-level, fine-grained taxonomy for web-environment Python code error types in online compilers with LLM integration, and develop a benchmark based on 40,000 real-world Python code errors with multi-level classification, combining single-error and multi-error detection cases.

- Enhance LLM’s multi-level error detection and classification through fine-tuning and prompting on multiple models, leveraging real error patterns and unstructured debugging logs from online compilers.
- Analyze and compare LLM performance on hierarchical error granularity and single-to-multi error detection tasks, examining biases, capability limits, and confidence across seven model architectures.

ShanghaiTech University, VDI Center | Research Assistant

2024.6 - 2025.3

Multi-modal Time Series Conditional Generation from Unstructured Text *Supervisor: Kan Ren*

- **Accepted by ICML2025:** VerbalTS: Generating Time Series from Texts
- Designed a **multi-focal framework** for finer-grained cross-modal semantic alignment and controllable time-series generation from unstructured text; validated on **6 synthetic and real-world datasets**.
- Implemented a **Multi-view Noise Estimator** that performs multi-resolution modeling and noise estimation across **temporal, spatial, and diffusion** perspectives, achieving **20%+ fidelity improvements** on datasets.
- Proposed a **Multi-focal Text Processor** that decomposes text embeddings into multi-semantic levels across temporal resolutions, spatial variables, and diffusion stages, using **learnable anchor vectors and semantic reprogramming** for fine-grained text alignment.
- Built an **adapter** that progressively aligns multi-semantic textual information with the time-series generation process for precise, hierarchical cross-modal control, reducing Weather J-FTSD from **18.33 to 8.56**.
- Proposed the **CTTP model and CTTP Score** for text–time-series semantic evaluation; improved **FID, J-FTSD, and CTTP** by **20%+** over strong baselines, with up to **58.7% lower FID**.

ShanghaiTech University, VDI Center | Research Assistant

2025.1 - 2025.5

Unified Model for Multi-modal TS Generation, Prediction and Editing *Supervisor: Kan Ren*

- **Under review:** Unified Generative Modeling for Multimodal Time Series Analysis
- Propose GENTS: unifying time series conditional generation, forecasting, and editing into a masked-conditional generation problem, modeled within a unified framework.
- Design the unified noise estimator enabling cross-task generation and adaptive multimodal time series modeling.
- Introduce a domain-agnostic automated time series captioning method based on the statistical and morphological features of time series data, effectively addressing the scarcity of domain-specific multimodal paired data.

Publications & Manuscripts

1. **AVA-Encoder: Towards Agent-Native Video Representation Learning**
Chuyue Li, J. Yu, H. Wang, X. Tian, Z. Zhang, B. Li, S. Gu, K. Ren, J. Liu, R. Huang
Under Review | *Self-Evolving Agents, RSI, Agentic Learning, Video Representation, Visual Evaluation*
2. **VisionCreator: A Native Visual-Generation Agentic Model with Understanding, Thinking, Planning and Creation**
J. Lai, Z. Lu, J. He, R. Quan, W. Zhao, Q. Yang, Q. Chen, Q. Lin, **Chuyue Li**, T. Gao, S. Guo, Q. Lu
CVPR 2026 Findings | *Agentic RL, GRPO, Planning & Tool Call, Composite Reward, Visual Feedback*
3. **PyMETA: Evaluating Student Code Diagnosis on and Beyond the First Execution Error**
Z. Tang*, **Chuyue Li***, J. Wang, Y. Wu, K. Hashimoto, L. Gao
NeurIPS 2026 TAE | *LLM for Code Understanding, Educational AI, Code Error Analysis, Benchmarking*.
4. **EvoScript: Reinforcement Learning for Script Generation with Evolving Rubrics**
X. Tian, B. Xu, **Chuyue Li**, J. Liu, C. Zhang, W. Feng, M. Ma, Y. Zhao, R. Huang, Y. Wang, H. Shen
Under Review | *GRPO, Self-Evolve, RSI, Script Creative Generation*.
5. **VerbalTS: Generating Time Series from Texts**
S. Gu, **Chuyue Li**, B. Jing, K. Ren
ICML 2025 | *Conditional Diffusion, Multimodal Generation, Multimodality Alignment, Time Series Modeling*.
6. **What to Edit Next: Visually Aligned Image-Editing Follow-Up Suggestions in Conversational Systems**
Z. Zhang, J. Yu, X. Song, B. Li, **Chuyue Li**, C. Du, X. Fang, J. Liu, R. Huang
Under Review | *Agentic RL, Interactive Image Edit, Multimodal Understand, Visual Recommendation*.
7. **Learning to Simulate Individuals from Macro Social Signals**
Y. Zhao, B. Liu, H. Yu, Z. Qi, S. Wang, **Chuyue Li**, Y. Liu, J. You
Under Review | *RL, User Simulation, Social Modeling, LLM Forecasting, Collective Intelligence*
8. **Unified Generative Modeling for Multimodal Time Series Analysis**
S. Gu, **Chuyue Li**, Y. Huang, B. Jing, Y. Zhao, K. Ren
Under Review | *Multimodal Learning, Unified Generative Modeling, Time Series Forecasting/Gen/Edit*.