Chujun Tang

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Education

Brown University Aug 2026 – May 2028
Sc.M in Computer Science *Providence, RI*

- **Research**: Current Research Assistant at Brown Visual Computing Group
- **Interests**: Geometry Representations for 3D Generation, Riemanian Geometry, Physics-aware Simulation

Washington University in St. Louis Aug 2023 – Dec 2025
B.S. in Computer Science and Mathematics *St. Louis, MO*

- **Courses**: Analysis of Algorithms, Large Language Model, Machine Learning, Topology, Real Analysis
- **Experience**: Teaching Assistant of CSE 412A: Artificial Intelligence

Technical Skills

Languages: Python, C#, C++, Javascript, Java, CUDA
Technologies: Unreal Engine, Unity, OpenGL, PyTorch, NumPy, Vulkan, Docker, Kubernetes, git
Software: Maya, Photoshop, Blender, Houdini

Projects

Probing Physical Understanding in Video Diffusion Transformers Nov 2025 – Present

- Investigated whether video diffusion models encode physical plausibility in their intermediate representations by developing a systematic probing framework applied to CogVideoX DiT features across 4,500+ videos from 7 generation models, targeting ECCV 2026 single-author submission
- Identified a shortcut learning problem in multi-model physics benchmarks where classifiers exploit source identity rather than physical correctness, motivating a single-source training pipeline that isolates genuine physics signal
- Applied findings to design a training-free method for physically plausible video generation, with lightweight classifiers (0.5M parameters, 0.7AUC) on frozen DiT features to guide diffusion sampling at early denoising checkpoints, and achieved a 30% boost over baseline CogVideoX-2B on established video physics benchmarks

Geodesic Path Optimization in Generative Latent Spaces Oct 2025 – Present

- Formulating semantically smooth interpolation as a geodesic boundary value problem on the probability density manifold of a diffusion model's latent space, targeting NeurIPS 2026 submission
- Deriving a path energy functional combining Riemannian geodesic smoothness, score-based density gradients, and feature-space regularization (DINO) to penalize off-manifold deviations
- Implementing iterative geodesic optimization on Flux architecture with discrete path discretization and energy minimization

SpireMancer, LLM Gameplay Agent for *Slay the Spire* | Mod · Training Sep 2025 – Dec 2025

- Trained a medium-sized language model, Llama 3-8B as a strategic gameplay agent for Slay the Spire by building a full pipeline spanning data collection, supervised fine-tuning, and reinforcement learning
- Engineered a custom game instrumentation mod in Java to capture 2,000+ state-action pairs with fully enumerated legal action spaces and executable commands from expert demonstrations
- Achieved 96% format correctness and 88% command validity with GRPO (vs. 61% / 46% baseline), along with 7–8× inference throughput over DPO and SFT; combined with few-shot prompting, reached 100% command validity and 54% exact-match accuracy

Experience

Game Development Summer Intern June 2025 – Aug 2025
NetEase *Hangzhou, CN*

- Designed core UI modules for an in-development UE5 MMO game using Blueprint and UMG framework.
- Conducted UE5 integration of large language model-powered emotional companion features, implementing C++ function schema registration interfaces enabling LLM to dynamically invoke in-game APIs
- Modified C++ gameplay systems for player interactions with NPCs, including event triggers and inventory management