Tong Zhu

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EDUCATION

Peking University Top50 Sep 2021 - Jul 2024

Master of Computer Technology

- Thesis Topic: Agentic Systems in Game-Based Environments and Real-Time Multimodal Human–AI Interaction
- Honors:Best Creative Group at the Emotional Embodied Media Workshop 2024(First Prize)

University of Electronic Science and Technology 985 Sep 2015 - Jun 2019

Bachelor of Software Engineering

- Honors:
  - First Prize of San Chuang Valley College Student Innovation and Entrepreneurship Competition
  - Excellent team for school-enterprise innovation projects

RESEARCH EXPERIENCE

Real-Time LLM Agent Architecture for 3D Real-Time Combat Environment Nov 2023 - Apr 2024

Peking University Digital Media Lab

- Research: Explored voice-driven Human-AI collaboration for 3D Real-Time Combat Environment, addressing latency and context-awareness challenges.
- Contributions: Developed a 3D real-time action game, designed and evaluated a real-time agent architecture with anticipatory intent modeling and delayed command arbitration, which reduced perceived interaction latency by 20% relative to a synchronous LLM baseline.
- Deliverables: Master's Thesis, Link: https://tongzhu-personal-website.vercel.app/

Serious Space: Exploring the Interactive Art Experience of Data Gaze and Panopticism Through Multimodal System Oct 2024 - Jan 2025

Peking University Digital Media Lab

- Research: Materialised Panopticism theory into an interactive installation using CV and multimodal systems to provoke critical reflection on digital surveillance and privacy.
- Contributions: Served as Co-author & Technical Lead, implemented a real-time eye-tracking module to transform abstract "gaze relations" into immersive and perceptible narrative experiences.
- Deliverables: Published in Springer, Link: https://link.springer.com/chapter/10.1007/978-3-031-93712-5_7

Cupid-Echo: Explore an inflatable shape changing interface for supporting emotional communication Jun 2024 - Nov 2024

Future Laboratory, Tsinghua University

- Research: Explored how tactile deformation and touch gestures mediate emotional expression in remote communication.
- Contributions: Developed a deformable physical interface, trained and deployed an ML model (80% accuracy) to establish semantic links between user emotions, tactile input, and device responses.
- Deliverables: Finalised the full-function prototype; revised the research paper; prepared for resubmission.

PROFESSIONAL EXPERIENCE

Perfect World Interactive Technology Co., Ltd. Sep 2022 - Mar 2023

Game Engine Development Intern

- Rendering Optimisation: Refined shaders and rendering algorithms, slashed Draw Calls by 60%, and substantially boosted real-time frame rates.
- GPU Profiling: Utilised RenderDoc to resolve performance bottlenecks; implemented LOD and culling strategies to balance visual fidelity and computational overhead.

- Engine Tooling: Built automated editor tools for resource management, streamlined the asset pipeline, and optimised cross-functional workflow efficiency.

China Post Shandong Branch Jul 2023 - Sep 2023

IT Development Intern

- Spatio-temporal Data Mapping: Developed core modules for employee location tracking and historical trajectory mapping, enabling smooth route playback and visual analysis.
- System Design & Implementation: Designed the database schema and developed backend APIs, implementing optimized batch processing and filtering logic for efficient trajectory data management.

PROJECT EXPERIENCE

Virtual Archaeology: Immersive Educational Game Nov 2025 - Present

The University of Hong Kong

- Virtual Simulation: Built a high-fidelity educational environment in Unreal Engine, optimizing for pedagogical impact on spatial cognition.
- Technical Innovation: Spearheaded asset integration and implemented a Voxel-based dynamic terrain system to achieve high-fidelity, interactive excavation physics.
- github: https://github.com/leothismorning/virtual-archaeology.git

LLM-based Personalized Learning Agent Oct 2025 - Dec 2025

Coze Developer Competition

- AI Tutor System Construction: Developed an AI tutor system to guide students in discovering and customizing personalized learning strategies through interactive sessions.
- LLM Integration: Built the Agent architecture using the Coze platform; integrated LLMs to automate study plan generation and visual reporting, exploring the application of generative AI in EdTech.

Technical Artist Camp Feb 2022 - Jun 2022

NetEase Games

- Low-level Rendering: Built a custom OpenGL pipeline featuring deferred rendering, lighting models, and post-processing.
- Stylized Shaders: Developed an anime-style material system in UE4 with dynamic water, interactive foliage, and advanced shader effects.

Multi-strategy Fusion Recommendation System Oct 2018 - Feb 2019

Sichuan Prov. Key Lab of Network & Data Security

- Classification: Built an automated classification module to provide metadata for the recommendation engine.
- Hybrid Engine: Integrated Collaborative Filtering and Item2Vec to enhance recommendation diversity.

EXTRACURRICULARS

Game Engine Course Teaching Assistant

- Organized game technology sessions to share Unreal Engine expertise, facilitating collaboration between art and tech students to resolve project bottlenecks and promote cross-disciplinary synergy.
- Assisted faculty in coordinating corporate visits to conduct in-depth research on Technical Art (TA) industry requirements and practical implementation strategies.

Educational Volunteer | Zhejiang & Inner Mongolia

- Led PKU teaching team seminars on learning strategies; provided remote guidance on major selection and mindset management for high school students.
- Pioneered interactive AI/VR workshops at public libraries using self-developed games to enhance student digital literacy.

SKILLS & INTERESTS

- Programming & Tools: Python, C++, Java, HTML, JavaScript, Unreal Engine, Unity, Arduino, Maya, PS
- Interests: AI Frontiers, Game Design & Technology, Team Sports, Innovative Technology Applications