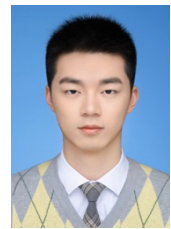


Tianyi Zhang

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Education

Cornell University, Ithaca, NY, USA

Expected Graduation: May 2027

Major: Computer Science (Honors) | **Minor:** Earth & Atmospheric Sciences | **GPA:** 3.92/4.0

Experience & Activities

Computer Graphics Research

Ithaca, NY | Feb 2026 – Present

Independent Research, advised by Prof. Abe Davis

- Developed a 2D Gaussian-based framework for non-contact vibration analysis from monocular video.
- Applied FFT and ARMA modeling to extract vibration frequencies, mode shapes, phase, and damping characteristics.
- Manuscript submission expected Nov 2026

AI Quantitative Trading System

Ithaca, NY | Aug 2026 – Present

Independent Project

- Built an end-to-end sequential decision-making system integrating data pipelines, model training, and execution.
- Developed PPO-based decision policies with causal observations and bias-aware backtesting.

Cornell University Teaching Assistant

Ithaca, NY | Jan 2025 – Present

Teaching Assistant

- CS 3152: Game Development: Mentored teams on Java/LibGDX development, debugging, and project scoping.
- CS 4620: Computer Graphics: Supported graphics coursework and contributed to assignment design and architecture.

SDIC Venture Capital Management Co., Ltd.

Shanghai, China | Dec 2025 – Jan 2026

Advanced Manufacturing Investment Intern

- Researched advanced manufacturing sectors, including RF front-end, SAW/BAW filters, and e-beam inspection.
- Analyzed market demand, market size, and competitive barriers using disclosures and industry reports.
- Conducted due diligence on potential investments, covering products, customers, orders, financing, and competitors.

Cornell CS 3152: Game Development

Ithaca, NY | Jan 2025 – Present

Game Systems Developer

- Developed Toymare, a real-time strategy game, contributing core gameplay systems and overall architecture.
- Led the game's software architecture, establishing coding standards and code-review workflows.
- Released on itch.io; Steam release pending final review.

Cornell CS 4152: Advanced Game Development

Ithaca, NY | Jan 2026 – May 2026

Game Systems Developer

- Developed core gameplay and multiplayer systems for Gnome More Shrooms! A co-op farming tower defense game.
- Contributed to game flow, input, and architecture, and optimized performance through profiling and playtesting.
- Released on iOS; awarded 2nd Place in Mobile Game of the Year at The Rookies 2026.

Cornell CS 4620: GPU Fluid Simulation & Volumetric Rendering

Ithaca, NY | Jan 2026 – May 2026

Game Systems Developer

- Developed a real-time WebGL 2 fluid simulation and volumetric water renderer in TypeScript/GLSL, reaching ~120 FPS with 40,000 particles on an RTX 4070 Laptop GPU.
- Implemented GPU neighbor search with spatial hashing and bitonic sorting, using ping-pong floating-point textures to avoid per-frame CPU readback.
- Added volumetric ray marching, SDF-based collisions, shoreline foam, and explicit density/physics passes for stable real-time simulation.

Cornell CS 5630: C++ Physically Based Rendering

Ithaca, NY | Jan 2026 – May 2026

Graphics/Rendering Developer

- Implemented a C++ physically based renderer with path tracing, Disney BRDF materials, and heterogeneous media.
- Added denoising and advanced light-transport features, and validated rendering quality across complex scenes

Cornell Earth Sciences — Geophysics & Remote Sensing Projects

Ithaca, NY | Jan 2026 – May 2026

Project Member / GIS & Remote Sensing Analyst

- Investigated San Francisco urban heat patterns using Landsat/ASTER surface temperature data and GIS layers, relating thermal variation to vegetation, topography, urban form, and infrastructure.
- Conducted non-invasive geophysical mapping at Lakeview Cemetery using GPR, EM38 conductivity, GNSS, and QGIS to identify subsurface anomalies and assess usable burial space.

Others

- Languages: Mandarin Chinese (Native), English (Fluent)
- Programming: C++, Python, Java
- Graphics & Vision: Computer Graphics, Physically Based Rendering, Computer Vision, OpenCV, Visual Motion Analysis
- Machine Learning: Machine Learning, Reinforcement Learning, LLM/Agentic AI
- Game Development: Game Systems, Multiplayer Systems, LibGDX, Performance Profiling
- Scientific Geospatial Computing: NumPy, pandas, GIS, QGIS, Remote Sensing, Geophysical Data Analysis
- Research Interests: Computer Graphics, Computer Vision, Machine Learning, Agentic Systems, Computational Finance, Market Behavior, Sequential Decision-Making, Geospatial Data Analysis