Zhangyun Tan

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EDUCATION

University of Rochester **Rochester, NY**
BS in Computer Science *05/2027 (expected)*
- Courses: Computer Vision, Machine Learning, Algorithms, Object-oriented Programming, Discrete Math

University of California, Berkeley **Berkeley, CA**
Exchange in EECS *01/2024-05/2024*
- Courses: Convex Optimization

EXPERIENCE

University of Rochester | Undergrad Research Assistant advised by Prof. Chenliang Xu **01/2025-present**
- *Contributing to projects on Multimodal learning especially in visual understanding*

DeepBlue AI | *NLP research internship* **07/2023 – 01/2024**
- ***"Virtual Town" Program****: Integrated a ChatGLM into a 2D map-based "Virtual Town" simulation, collaborating with Unity engineers to transform 2D map data into a realistic 3D map, enabling culturally informed, context-driven agent behaviors.*
- *Implemented NeRF algorithms to transform 2D images into 3D reconstructions, and applied these techniques to produce high-fidelity 3D environments industrially.*

PROJECTS

Accelerated Gradient Descent with Mirror Descent **05/2024**
- *Established and validated theoretical convergence rates for mirror descent and hybrid mirror-gradient methods, enhancing optimization efficiency in convex settings.*
- *Developed and implemented accelerated gradient descent algorithms in Python, outperforming baseline optimizers in empirical benchmarks.*

Embodied Gaming Agent **09/2023 – 01/2024**
- *Designed a reinforcement learning (RL) agent powered by GPT-4 for decision-making in a JavaScript-based Minecraft-like simulation.*
- *Leveraged a multimodal approach combining visual cues, environment states, and language-based instructions to guide adaptive agent behavior.*
- *Achieved higher task completion rates and better strategic adaptability compared to baseline RL agents using smaller language models.*

Generative Agents for Urban Simulation **08/2023 - 12/2023**
- *Integrated ChatGLM, a Chinese large language model (LLM), into a 2D map environment for culturally nuanced decision-making and context-aware interactions.*
- *Collaborated with 3D engineers to deploy generative agents in a Unity-based simulation of downtown Wuhan, driving narrative-rich, context-sensitive actions in dynamic environments.*

TOOLS

Python, R, C/C++, Java Script, MATLAB, PyTorch, TensorFlow, scikit-learn, NumPy, pandas