Xiaoxi Yang

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Education

Brown University **Sep. 2023 – May 2025**
Master of Science in Computer Science *Providence, RI*
GPA: 4.0 / 4.0

Wenzhou-Kean University **Sep. 2019 – May 2023**
BS in Computer Science & Minor in Mathematical Science, Summa Cum Laude *Wenzhou, China*
GPA: 3.946 / 4.0 (Ranking: 1/86); Zhejiang Province Government Scholarship

Publications

- I. Gonsher, J. Phelps, S. Yan, **X. Yang**, "Bimodal Affective Computing Interfaces for Emerging Artificial Intelligence Paradigms," in *Proc. Int. Conf. Appl. Human Factors Ergon.*, 2024, pp. 1-10. DOI: 10.54941/ahfe1005363
- X. Guo, H. Hu, **X. Yang**, Y. Deng, "Enhancing Few-Shot 3D Point Cloud Semantic Segmentation through Bidirectional Prototype Learning," in *Proc. 9th Int. Conf. Robot. Artif. Intell.*, 2023, pp. 7-16. DOI: 10.1145/3637843.3637848
- **X. Yang**, J. Hu, "Deep Neural Networks for Chinese Traditional Landscape Painting Creation," in *Proc. SPIE 12348, 2nd Int. Conf. Artif. Intell. Autom. High-Perform. Comput.*, 2022, 123483T. DOI: 10.1117/12.2641585

Research Experience

2D-to-3D Sketch Lifting **Jun. 2025 - Present**
Advisors: Prof. Daniel Ritchie & Dr. Adrien Bousseau *Brown University*

- Built end-to-end 3D stroke reconstruction pipeline from monocular sketch inputs; integrated VGGT depth estimation with camera-based back-projection, validated on **100 synthetic CAD models**
- Designed True2Form-inspired geometric constraint optimization enforcing connectivity, parallelism, and orthogonality; achieved +**8.64%** accuracy over VGGT reconstruction with **98%** success rate
- Developed synthetic training data pipeline from multiple CAD datasets and fine-tuned VGGT depth model; achieved +**26.8%** depth accuracy over original VGGT using Procrustes-aligned evaluation
- Identified synthetic-to-real domain gap through cross-domain evaluation; applied generative AI to convert hand-drawn sketches to synthetic style, achieving +**4.1%** improvement on **178 sketches** from OpenSketch

Selected Projects

3D Interactive Fluid Simulation **Apr. 2025 - May 2025**
C++, OpenGL, GLSL | CSCI 2240 Advanced Computer Graphics Final Project

- Implemented interactive 3D fluid simulator based on **Jos Stam's stable fluids algorithm**; developed mouse-based fluid generation with real-time velocity mapping and **Gaussian distribution**
- Designed **ray marching volume renderer** with **11 visual schemes** using **FBM noise**; developed fruit-shaped obstacle system with fluid-obstacle interaction
- Implemented **vorticity confinement** and **shell rendering** features; optimized with **OpenMP parallelization** for real-time performance

Real-time Environmental Renderer **Nov. 2024 - Dec. 2024**
C++, OpenGL, GLSL | CSCI 1230 Computer Graphics Final Project

- Developed real-time environmental renderer with **infinite procedural terrain**, **day/night cycle**, and **3 terrain biomes**
- Implemented **Preetham Sky Model** for atmospheric scattering; designed water system with **3-layer displacement mapping** and dynamic UV animation
- Created **GPU-based particle system** for rain/snow effects; generated terrain using **Perlin noise** with **height-based texture blending** and **multi-threaded chunk loading**

Animatable Avatar from Monocular Video **Apr. 2025 - May 2025**
Python, PyTorch, SAM, SMPL-X, 3DGS | CSCI 1430 Computer Vision Final Project

- Built 4-stage motion transfer pipeline integrating **OpenPose** pose estimation, **SAM** segmentation, **SMPL-X** mesh reconstruction, and **3D Gaussian Splatting** rendering to animate avatars from monocular video
- Developed **data format conversion** utilities and **visualization tools** using **pyrender**/**trimesh**; resolved **VPoser-to-SMPL-X** parameter compatibility issues for pose transfer

Teaching

Teaching Assistant **Sep. 2021 – Dec. 2022**
Wenzhou-Kean University *Wenzhou, China*

- Courses: Analysis of Algorithms, Computer Organization & Programming, Fundamentals of Computer Science