Xiyang Tan

Email | Homepage | Linkedin | Github

EDUCATION

- **Lancaster University** *Oct 2023 - Sep 2024*
  M.S. in Data Science. Manchester, UK
  - Selected coursework: Statistical Foundations (78%, Distinction), Distributed Artificial Intelligence (73%, Distinction), Data Mining (73%, Distinction).
  - Graduated with Merit.

- **University of Science and Technology of China** *Sep 2018 - Jun 2023*
  B.S. in Mathematics. Hefei, China
  - Selected coursework: Computer Graphics (94%), Advances in Computer Graphics (A), Wavelet Analysis (87%), Functional Analysis (85%), Differential Geometry (83%), Numerical Analysis (81%).
  - Honors: Outstanding undergraduate scholarship, Endeavor scholarship.

RESEARCH INTEREST

- **Computer Graphics**: Physics-Based Simulation, Physics-Based Rendering, Geometric Modeling.
- **Computer Vision**: 3D Reconstruction (NeRF, 3DGS), Differentiable Rendering.
- **Generative AI**: Image/Video Generation, Image/Video Editing.
- **High-Performance Computing**: Parallel Computing, Numerical Methods.

EXPERIENCE

- **Artificial Intelligence & Visual Computing Lab, University of California, Los Angeles** *April 2024 - Dec 2024*
  Research Assistant. Advisor: Prof. Chenfanfu Jiang. Los Angeles, USA
  - Developed PhysMotion, a novel framework that leverages principled physics-based simulations to guide intermediate 3DGS representation generated from single image and input conditions (e.g., applied force and torque), producing high-quality, physically plausible video generation.
  - Applied Video-Score-Distillation-Sampling (VSDS) loss to distill prior knowledge from pre-trained video generation model, optimizing physics-based simulation parameters (Young's Modulus, Bulk Modulus). Codes available here.

- **School of Computing, National University of Singapore** *Jun 2022 - Aug 2022*
  SOC Summer Workshop Real-Time Rendering Track. Advisor: Dr. LOW Kok Lim. Remote
  - Individually implemented 3D real-time rendering techniques in C++ and OpenGL including anti-alising, shadow mapping, and Gaussian blooming.
  - Collaboratively implemented a real-time ray-tracing solar system simulation project, ranking 1st among all projects. Codes available here.

PROJECT

- **Real-Time Ocean Surface Simulation Based on GPGPU and IFFT** *Nov 2022 - Apr 2023*
  Advisor: Prof. Renjie Chen. [Thesis and codes]
  - Used compute shader in OpenGL to parallelize the Inverse Fast Fourier Transform (IFFT) algorithm, which is applied on Phillips spectrum texture generated from random noise to obtain the height field texture of ocean surface in real-time.
  - Applied Blinn-Phong lighting model to achieve real-time rendering, allows user interactive scene walking.

PUBLICATION

[1] **Xiyang Tan***, Ying Jiang*, Xuan Li* (Equal Contributions), Zeshun Zong, Tianyi Xie, Yin Yang, Chenfanfu Jiang (2024). **PhysMotion: Physics-Grounded Dynamics From a Single Image**. *arXiv*, 2024.

SKILL

- **Programming Tools:** Python (PyTorch, Taichi, Nvidia Warp), C/C++ (Eigen, OpenGL), GLSL, R, Git, LaTeX, MATLAB, Wolfram Mathematica, Unity, Houdini.
- **Language Proficiency:** TOEFL 105, GRE 322.