

Fanbo Xiang

Address: 7693 Palmilla Dr, San Diego, CA, US

Visa Status: F1

☎ (+1) 858-222-9698

✉ xiangfanbo@gmail.com

🏠 www.fbxiang.com

📄 github.com/fbxiang

Research Summary

My research focuses on machine learning, vision, and robotics. I am currently working on simulated robotics environments. I also have solid background on software system design and HCI.

Education

University of California San Diego

Ph.D. Candidate in Computer Science

2020 - Present

M.S. Computer Science (GPA 4.0)

2018 - 2020

- advisor: **Prof. Hao Su**

University of Illinois Urbana-Champaign

B.S. Computer Science, B.S. Mathematics Dual Degree (with Highest Honors, GPA 3.97)

2014 - 2018

Selected Publications

ManiSkill2: A Unified Benchmark for Generalizable Manipulation Skills

San Diego, CA

Jiayuan Gu*, **Fanbo Xiang***, Xuanlin Li, Zhan Ling, Xiqiang Liu, Tongzhou Mu, Yihe Tang, Stone Tao, Xinyue Wei, Yunchao Yao, Xiaodi Yuan, Pengwei Xie, Zhiao Huang, Rui Chen, Hao Su

2022

- Published at ICLR 2023

ManiSkill: Learning-from-Demonstrations Benchmark for Generalizable Manipulation Skills

San Diego, CA

Tongzhou Mu*, Zhan Ling*, **Fanbo Xiang***, Derek Yang*, Xuanlin Li*, Stone Tao, Zhiao Huang, Zhiwei Jia, Hao Su

2021

- NeurIPS 2021 Datasets and Benchmarks Track
- Research on designing a benchmark for learning to manipulate unseen objects from 3D visual inputs.
- Designed benchmark architecture, simulation environments, sensor and robot setups.

Neural Texture Mapping for Volumetric Neural Rendering

Remote

Fanbo Xiang, Zexiang Xu, Miloš Hašan, Yannick Hold-Geoffroy, Kalyan Sunkavalli, Hao Su

June 2020 - Nov. 2020

- CVPR 2021 (oral)
- Research on visual capturing, differentiable rendering, and 3D representation at Adobe.
- Disentangle 3D volumetric geometry and 2D appearance in volumetric scene representation.

SAPIEN: A Simulated Part-based Interactive Environment

San Diego, CA

Fanbo Xiang, Yuzhe Qin, Kaichun Mo, Yikuan Xia, Hao Zhu, Fangchen Liu, Minghua Liu, Hanxiao Jiang, Yifu Yuan, He Wang, Li Yi, Angel Chang, Leonidas Guibas, Hao Su

Jan. 2019 - Present

- CVPR 2020 (oral)
- Leading the development of a simulation environment for robotics manipulation and learning tasks.
- Leading the construction of a large-scale articulated body dataset. Developed its annotation interface.
- Designed neural networks for motion parameter estimation.
- Designed OpenGL rasterizer and OptiX raytracer for rendering.

Academic Experience

Project on SPH fluid simulation

San Diego, CA

Project for Physical Simulation

Mar. - June 2019

- Implemented GPU SPH fluid simulation, including solvers for incompressible and high viscosity fluids.
- Implemented GPU marching cube, raytraced water rendering, foam and spray generation.

Music Generation with MusicVAE and GAN

Project for Deep Learning for Sequences

San Diego, CA

Dec. 2018 - Mar. 2019

- Implemented a symbolic music generator combining MusicVAE and GAN networks.

Project on Denoising Ray Traced Rendering

Project for Sampling and Reconstruction of Visual Appearance

San Diego, CA

Sept. 2018 - Dec. 2018

- Implemented the Adaptive Rendering with Non-Local Means Filtering using Optix and CUDA.

HCI Researcher

MUS-ROVER project (instructed by prof. Lav Varshney)

Champaign, IL

Dec. 2016 - Dec. 2017

- Developed the web server for MUS-ROVER, an experimental platform for machine learning and teaching on music theory.
- Developed data visualization algorithms to interpret music theory results learned by language models.

Game Developer

Association of Computing Machinery(ACM), SigMusic

Champaign, IL

Jan. 2015 - May. 2018

- Led development of games that are exhibited at Engineering Open House events.
- Built games with Unreal 4, web-based game engines, Kinect sensor, and hardware designed by our group. Collaborated with electrical engineers to design games with custom hardware inputs.

Software Developer

DISSCO Experimental Computer Music Software

Champaign, IL

Jan. - May. 2018

- Maintained software for multi-threaded and distributed music synthesis.
- Added music synthesis methods and improved graphical interface written in GTK(C++).

Working Experience

Robotics Simulation Intern

NVIDIA

Remote

June - Sept. 2021, 2022

- Research on robotics and physical simulation.

Research Intern

Adobe

Remote

June - Sept. 2020

- Research on graphics and computer vision.
- Focus on neural capture and differentiable rendering.

GPU Software Performance Intern

Apple Inc.

Cupertino, CA

June - Sept. 2019

- Profiling software performance for iOS applications.
- Improving GPU workloads on iOS with machine learning using CoreML framework.
- Developing applications with Objective-C and Metal.

Software Engineer Intern

Intelligent Medical Objects

Champaign, IL

May - July 2017

- As a full stack engineer, developed Web API with ASP.NET(C#).
- Developed Web front-end with Angular 2. Developed mobile client with React-native/Redux.

Teaching Experience

Teaching Assistant

Machine Learning Meets Geometry

San Diego, CA

Jan. - Mar. 2021

- Teaching geometry, computer vision, computer graphics, 3D machine learning.

Teaching Assistant

Computer Vision

San Diego, CA

Sept. - Dec. 2019

- Teaching linear algebra, detection, tracking, and deep networks.

Course Assistant

Introduction to Algorithms & Models of Computation

- Teaching regular languages, Turing machine, NP-completeness, graph algorithms and dynamic programming.

Champaign, IL

Aug. - Dec. 2016

Other Skills

Programming	C++, Python, Web(NodeJs, Angular 2), GPU(Vulkan, GLSL, CUDA, Metal)
Machine Learning	PyTorch, Tensorflow
Development	Git, Docker, Vim
Game Engines	Unreal, Unity
Art	3D Modeling in Blender, Image Processing in GIMP, Basic Music Composition