Mangnike (Nurshat) Nulixiati

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ABOUT ME

I am currently a research assistant at Vanderbilt University, where I am pursuing a PhD in computer science under the guidance of Professor David Hyde. My research is centered around leveraging advanced machine learning techniques to traditional computer graphics, focusing on physics-based simulation and animation. My research interests also span computational physics, fluid dynamics, deep learning, computer vision, parallel computing, virtual reality, and rendering.

WORK EXPERIENCE

Research Assistant
Vanderbilt University [01/09/2022 – Current]

City: NASHVILLE
Country: United States

Advisor: Dr. **David Hyde**
- Enhancing the accuracy and efficiency of traditional computational fluid dynamics and thermodynamics through the application of deep learning techniques
- Hot air balloon physics simulation based on Material Point Method (MPM)

Teaching Assistant
Vanderbilt University [01/09/2022 – Current]

- CS 3281 (Principles Operating Systems) - Fall 2022
- CS 3891/5891 (Numerical Methods) - Fall 2023
- CS 3891/5891 (Quantum Computing) - Spring 2024

Research Intern
University of California, Davis [01/07/2021 – 01/12/2021]

City: Remote

Advisor: Dr. **Joseph Teran**
- Finite Element Methods (FEM) for simulating elastic materials
- Studying the Material Point Method (MPM)

Research Intern
Institute of Software, Chinese Academy of Sciences [01/01/2021 – 01/12/2021]

City: Beijing
Country: China

Advisor: Dr. **Xiaowei He**
- Real-time fluid surface tension simulation using semi-analytical method
- Fluid simulation using Smoothed-particle hydrodynamics (SPH)
- Parallel computing with CUDA
- Physics-based Simulation Engine: **PeriDyno**

Undergraduate Research Assistant
Peking University [01/05/2020 – 01/12/2020]

City: Beijing
Country: China

Advisor: Dr. **Guoping Wang**
- Physics-based Simulation Engine: **PhysIKA**
- Mesh and topology optimization

EDUCATION AND TRAINING

Doctor of Philosophy - PhD
Vanderbilt University [01/09/2022 – Current]

Field(s) of study: Computer Science

Bachelor of Science
Peking University [01/09/2017 – 01/07/2022]

Field(s) of study: Computer Science

DIGITAL SKILLS

Python / C, C++, CUDA / PyTorch / Matlab / Linux / SideFX Houdini / COMSOL Muiltiphysics / FEniCS / Unity 3D / Blender / OpenGL / JavaScript / Git

PUBLICATIONS

Toward Improving Boussinesq Flow Simulations by Learning with Compressible Flow

Nurshat Mangnike, David Hyde, Platform for Advanced Scientific Computing (PASC), 2024 (In review)

Semi-Analytical Surface Tension Model for Free Surface Flows

N. Menglik, H. Yao, Y. Zheng, J. Shi, Y. Qiao, X. He, IEEE VR, Poster, 2022.
Link: https://nurshat317.github.io/video/PosterVideo.mp4

HONOURS AND AWARDS

Dean's Graduate Fellowship
Vanderbilt University [01/09/2022]

Russell G.Hamilton Scholar
Vanderbilt University [01/09/2022]

1st Place FortyAU Award for VR Project
Department of Computer Science, Vanderbilt University [01/12/2022]

Our VR project, '**Accessibility Quest**', won the 1st place award (worth $4,000) in the VR project competition. The project focuses on using VR technology to improve urban accessibility for people with disabilities, providing valuable insights for city designers.