

Ziyin Qu

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EDUCATION

University of Pennsylvania, Philadelphia, PA
Ph.D. in Computer and Information Science, 2019-Present

University of Pennsylvania, Philadelphia, PA
Master of Science, Scientific Computing, 2016-2018 GPA: 3.41

Harbin Institute of Technology, Harbin, China
Bachelor of Engineering, Mechanical Engineering, 2012-2016 GPA: 84/100

PROJECTS

Conditional Variational Autoencoder FEM(C++, PyTorch): Spring, 2018
- A 2D Finite Element Method simulation with linear basis and quadratic basis is implemented, with the investigation of using Conditional Variational Autoencoder to generate quadratic FEM results based on linear FEM results.

Monte Carlo Path Tracer(C++, Qt): Spring, 2018
- A Monte-Carlo path tracer for photorealistic renders. Feature includes multiple importance sampling, photon mapping, volumetric rendering and different BSDFs.

Material Point Method Simulator(C++): Fall, 2017
- Material Point Method solver with PIC/FLIP and APIC transfer scheme for simulating elastic objects, weakly compressible fluid, and snow. Analytic levelset and a Poisson Disk sampler are also implemented.

Large Eddy Simulation of Film Cooling Flow(OpenFOAM): Spring, 2016
- Investigating film cooling flow using LES Smagorinsky model through PIMPLE algorithm, compared LES model with RANS, DNS simulation results using fully-developed channel flow.

COMPUTER SKILLS

Languages: C++, CUDA, Python, MATLAB, SQL, L^AT_EX.
Applications: Houdini, Git, Qt Creator, CMake

EXPERIENCE

Light Chaser Animation Internship
June, 2019 - July, 2019
- Developing high-fidelity muscle simulation.

AICFVE Research Internship
Sep, 2018 - Present Advisor: Xinxin Zhang
- Developed a new conservative and efficient fluid advection scheme.

Teaching Assitant
Spring, 2018 CIS 563: Physically Based Animation
- Course topics include mass-spring systems, Finite Element Methods, Position-based Dynamics, Position-based Fluids, Semi-lagrangian smoke and Material Point Method.

RESEARCH INTERESTS

Physically based simulation, numerical methods, deep learning, data driven modeling and simulation

PUBLICATION

Ziyin Qu*, Xinxin Zhang, Ming Gao, Chenfanfu Jiang, Baoquan Chen. *Efficient and Conservative Fluids Using Bidirectional Mapping* ACM Transactions on Graphics (SIGGRAPH), 2019

Yuanming Hu, Yu Fang, Ziheng Ge, **Ziyin Qu**, Yixin Zhu, Andre Pradhana, Chenfanfu

Jiang. *A Moving Least Squares Material Point Method with Displacement Discontinuity and Two-Way Rigid Body Coupling*. ACM Transactions on Graphics (SIGGRAPH), 2018