Yuan Meng

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EDUCATION

University of Electronic Science and Technology of China (UESTC) **Chengdu, China**
B.Eng. in Computer Science and Technology, GPA: 3.96/4.0 *09/2018-07/2022*
Relevant Coursework: Data Structure and Algorithm, Linear Algebra, Calculus, Operating System, Computer Architecture, Distributed & Parallel Computing
Honors & Awards: Tier 1 Excellent Student Scholarship, UESTC, 2018-2021

Carnegie Mellon University **Pittsburgh, USA**
M.S. in Information Networking, GPA: 3.82/4.0 *09/2022-05/2024*
Relevant Coursework: Computer Graphics, Computational Photography, Physics-based Rendering, Computer Game Programming

ACADEMIC EXPERIENCE

More details on graphics projects can be found on my website

Benchmark for Evaluating Persistent Memory Indexes **Online**
Research Assistant, Prof. Tianzheng Wang's Lab, Simon Fraser University *07/2021-10/2021*
- Integrated benchmark tool PiBench using C++ to evaluate the performance of indexes in persistent memory
- Evaluated total running time for typical workloads like read, read+insert, update+insert with both indexes' own benchmark and PiBench. Tested indexes such as FPTree, LBTree and Dash
- Identified overhead in both benchmark and indexes using Linux perf and then made necessary enhancements

CUDA and MPI Optimization **Chengdu, China**
Individual Project, Distributed and Parallel Computing Course Project *03/2021-04/2021*
- Optimized MPI and CUDA code by utilizing CPU Cache and shared memory in addition to reducing the sending, receiving of messages, and using instruction sets like AVX

Parallel Query Plan for MySQL Optimizer **Chengdu, China**
Undergraduate Thesis/intern project, advised by Prof. Hancong Duan & Shuai Lou *10/2021-05/2022*
- Implemented parallel Iterator, AccessPath, parallel query plan and aggregation operation
- Implemented data transfer between main thread and worker threads(serialization/deserialization)
- Implemented 'explain' operation
- Evaluated speed-up using standard benchmark tools and custom scenarios.

Primary Sample Space MCMC & delayed rejection **Pittsburgh, USA**
Individual project, Physics-based Rendering *03/2023-05/2023*
- Implemented the primary sample space Markov chain Monte Carlo algorithm for computing light transport and implemented the delayed rejection improvement for sampling lighter area
- Evaluated and analyzed the effectiveness of the algorithm

BRDF Reconstruction Using MERL Database **Pittsburgh, USA**
Individual project, Computational Photography *10/2023-12/2023*
- Used PCA to find a linear combination of the BRDF in MERL database to represent a new isotropic material
- Optimization on sample directions
- Evaluation and Comparison with PCA/two-shot and with MCMC reconstruction

Markov chain Monte Carlo Reflectometry **Pittsburgh, USA**
Master's Thesis, advised by Prof. Ioannis Gkioulekas *07/2023-08/2024*
- Implemented the MCMC pipeline and different proposals to adaptively acquire BRDF pairs from new materials

- Integrated normalizing flows to MCMC to achieve adaptive sampling
- Generated BRDF to be used in a renderer using optimized normalizing flows

Optimized GGX Reflection Probe Generation **Pittsburgh, USA**
Individual Project as an intern, advised by Prof. James McCann *08/2024-*

- Implemented the polynomial optimization pipeline for finding best lighting directions for given roughness
- Expanded the optimization to view dependent(non-radial-symmetric) case
- Expanded the optimization to arbitrary isotropic materials, when backscattering BRDF of the materials is available

TEACHING EXPERIENCE

15-327 Monte Carlo Methods and Applications **Pittsburgh, USA**
Teaching Assistant *09/2023-12/2023*

- Office hours
- Assignments/exam design and grading

TECHNICAL SKILLS

Programming Languages: C/C++, Python, Shading Language (OpenGL)
Modeling: Blender