YIHENG ZHANG

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EDUCATION

Stanford University Sept. 2019 - Jun. 2021 (Expected)
M.S. in Computer Science
Advisor: **Pat Hanranhan**

Shanghai Jiao Tong University Sept. 2015 - Jun. 2019
*B.S. in Computer Science with **Honors** - Overall GPA: 3.95/4.0*
Thesis: Deep Denoising in Monte Carlo Path Tracing Rendered Images
Related course: Computer Graphics, Data Visualization, Digital Image Processing, Machine Learning, Algorithm and Complexity, Theory of Computation, Operating Systems, Computer Architecture, Computer Networks, Data Structure

WORKING EXPERIENCE

Intel Corporation Sept. 2018 - Mar. 2019
Graphics Software Engineering Intern, Visual Computing Enabling

- Unreal Engine 4 parallel rendering optimization and hardware interface module C++ R&D
- DirectX 11/12 threaded rendering development with Intel TBB and Microsoft WTP
- Created a open-source C++ tool to transform .sdkmesh model to .obj model
- Created a open-source scene on UE4 to demonstrate the VCE group's improved parallel rendering

RESEARCH EXPERIENCE

Lab of Digital Media and Computer Vision (DMCV) Feb. 2017 - Jun. 2019
Research Assistant
Advisor: Lizhuang Ma (Distinguished Professor)
Research Topic: physically-based rendering, rendering denoise, semantic segmentation

PUBLICATIONS

Light Transport Simulation via Generalized Multiple Importance Sampling Apr. 2018
*Qi Liu, **Yiheng Zhang**, Lizhuang Ma - CVM 2018 Oral*

- A generalized multiple importance sampling method improved the efficiency of VCM algorithm by $\sim 20\%$.

SELECTED PROJECTS

Progressive Multiple Network Rendering Denoise Apr. 2018 - Present

- A Multi-stage CNN-based offline rendering denoise network (Python/PyTorch)
- Designed a frequency prediction module to fuse different denoised images with adversarial training

Night-time Street Scene Semantic Segmentation with Exposure Attention Sep. 2018 - Apr. 2019

- An end-to-end approach to utilize exposure map for semantic segmentation using attention guidance
- Responsible for dataset generation, data engineering and experiment implementation (Python/PyTorch)

Simple Path Tracer Nov. 2017

- Built scene and implemented core algorithm with C++, mathematical utilities courtesy: SmallVCM
- Specular, diffuse, refraction are included

U-Net Interactive Object Selection Oct. 2017 - Jan. 2018

- An open-source deep learning solution (TensorFlow) for interactive object selection
- Increased accuracy by 15.91% on salient object compared with *Deep Interactive Object Selection*.

Isochart-based Auto Geometry Mesh Cutting and UV Alignment Apr. 2017 - Jun. 2017

- An interactive approach to generate UV alignment of object mesh charts using ISOChart algorithm
- Responsible for testing and optimizing the mesh texture coordinate processing part in C++

SKILLS

C++, Python, C, PyTorch, Matlab, Git, Linux, JavaScript, Ray Tracing, Real-time Rendering, Audio Mixing