CHEN HAONAN

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EDUCATION

ETH Zurich *Aug 2023 -*
Master's degree of Computer Science Zurich, Switzerland

The Chinese University of Hong Kong *Aug 2018 - Aug 2023*
Bachelor's degree of Computer Science (First Class Honour) Hong Kong

EXPERIENCE

Quest3 rendering pipeline study and UE dynamic batching implementation
Tencent Lightspeed Studios Summer internship *Jun 2024 - July 2024*

- Study the binocular rendering pipeline of the Quest 3, focusing on the difference between single-pass stereo pipeline and single-pass multiview pipeline.
- Code the Dynamic Batching function as a plugin to the UE engine. RenderDoc and Snapdragon Profiler were used to test the Dynamic Batching on the Samsung 10e. The results show that the Dynamic Batching can significantly reduce draw call overhead.
- Octree is applied to more reasonably batch objects with the same material, thereby improving the efficiency of frustum culling.

Rendering: view of a Hong Kong street
Computer Graphics Rendering Competition *Oct 2023 - Dec 2023*

- Referencing PBRT and Mitsuba, we utilized the basic functionality provided by Nori to implement static scene rendering with path tracing. Ray propagation in the homogeneous/heterogeneous volume is also implemented using the delta tracking and ratio tracking algorithms. For surface radiance calculations, Multi-Importance Sampling of BRDF sampling and light source sampling is applied.
- Other functions include the fundamental image texture, normals texture, MipMap with Gaussian sampling kernel, Microfacet material.

3D Human Pose Reconstruction from Monocular Image
Bachelor's Final Year Project *Sep 2021 - Apr 2022*

- In the final year thesis on 3D human pose reconstruction, we refer to a model called I2L-MeshNet and try to improve it with other new network blocks. Human3.6M was used as our training dataset.
- The graph convolutional network is adapted to substitute the original convolutional layers to exploit human skeleton structure information. Besides, we utilized other training strategies such as weakly supervised learning.

ACTIVITIES

Digital intelligence competition invitational tournament, Tencent *May 2023 – Jul 2023*

- The event requires participants to apply Reinforcement Learning on a multi-agent problem. Our team joined the Final of the competition and achieved the 6th place.

SKILLS

Artificial Intelligence Pytorch Framework, Computer Vision (Deep Learning Based Knowledge, SfM), Probabilistic AI (Gaussian Process, Reinforcement Learning)
Computer Graphics Path/Light Tracing Rendering, Photon Mapping, Participating Media Simulation, Renderdoc, basic UE source code