Qiaosen Chen

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EDUCATION

UNIVERSITY OF PENNSYLVANIA
MASTER OF SCIENCE IN ENGINEERING, COMPUTER GRAPHICS
Expected May 2021 | Philadelphia, PA
GPA: 3.90 / 4.0

SOUTHEAST UNIVERSITY
BACHELOR OF ENGINEERING IN SOFTWARE ENGINEERING
Sept 2015 - Jun 2019 | Nanjing, Jiangsu, China
GPA: 3.58 / 4.0

SKILLS

LANGUAGES
C++, Python, Java, JavaScript, GLSL, SQL, HTML, CSS

SOFTWARE
Visual Studio, Qt, Git, Jupyter, Unreal Engine, Unity, MySQL, MongoDB

GRAPHICS
CUDA, OpenGL, Vulkan, OpenCV

EXPERIENCE

TENCENT AMERICA | MEDIA ENGINEER INTERN
Jun 2020 - Aug 2020 | Palo Alto, CA (remote)
- Captured images in Unreal Engine and implemented the conversion of Cubemap and Equirectangular images.
- Synthesized intermediate 360° images with OpenCV, based on the Stereo Matching algorithm and Spherical View Synthesis model, and blended images together with DeepBlending model in TensorFlow.
- Merged a sequence of images into a video and converted it to 360° video by Google Spatial Media tool.

HUAWEI TECHNOLOGIES | SOFTWARE DEVELOPMENT ENGINEER INTERN
Dec 2018 - Mar 2019 | Nanjing, Jiangsu, China
- Developed the Java backend of a microservice used to monitor and predict the traffic data on the network links, using the Spring Framework.
- Implemented the function of calculating mimic traffic and the function of batch activating expansion of volume according to the YAML files. Tested those functions with Postman after the process of CI/CD.
- Wrote Python scripts to generate mock traffic data and mock traffic event data, and stored the data in Redis.

PROJECTS

CUDA PATH TRACER WITH DENOISER: GPU BASED RENDERER | C++, CUDA, OPENGL
- Achieved diffuse and specular reflection, and refraction with Frensel effects using Schlick's approximation.
- Implemented arbitrary mesh loading and glTF files rendering with bounding volume intersection culling, texture mapping and normal mapping by using texture memory in CUDA.
- Denoised the originally rendered images with the implementation of A-trous wavelet filter.

VULKAN BASED GRASS SIMULATOR AND RENDERER | C++, VULKAN, GLSL
- Represented grass blades as Bezier curves and simulated physical model with gravity, recovery and wind forces.
- Cull those blades with front face direction perpendicular to the view vector or outside of the view-frustum.
- Implemented tessellation with varying levels of detail as a function of how far the grass blade is from the camera.

MONTE CARLO PATH TRACER: QT BASED RENDERER | C++, OPENGL, GLSL, QT
- Implemented the Monte Carlo path tracing to render a scene with different lighting techniques, including direct lighting, global illumination with multiple importance sampling and photon mapping.
- Implemented different reflection models and different kinds of lights.

MINI MAYA: QT BASED MESH EDITOR | C++, OPENGL, GLSL, QT
- Constructed mesh using half-edges and developed GUI with visual debugging and topology editing tools.
- Implemented Catmull-Clark subdivision and the functions of extruding faces and selection via ray casting.
- Built up the virtual skeleton structure with shader-based skin deformation.

AIR PAINTER: VR PAINTING GAME | C++, UNREAL ENGINE
- Developed the drawing function with Spline Component and designed different stroke materials in Unreal Engine.
- Designed the UI in Figma and implemented the game user interface with taking Ergonomics into account.
- Implemented teleport function to move around, and serialized the scene data to save and restore the game.