Yingjie Guo

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Education

University of Pennsylvania — Philadelphia, PA
Master of Science in Engineering in Computer Graphics and Game Technology — *Dec. 2022*
Courses: Game Design, Physically Based Rendering, Computer Animation, Product Design — *GPA:4.0/4.0*

University of Pennsylvania — Philadelphia, PA
Master of Science in Engineering in Material Science and Engineering — *Dec. 2022*
Courses: Energy Storage and Technology, Fabrication of Nanomaterials, Optical Metamaterials — *GPA:3.8/4.0*

Beihang University — Beijing, China
Bachelor of Science in Chemistry — *June 2019*
Courses: Analytical Chemistry, Inorganic Chemistry, Electrochemistry, Organic Chemistry — *GPA:3.7/4.0*

Experience

Research & Development Intern — May. 2022 – Aug. 2022
Tencent America — *Los Angeles, CA*
- Worked with senior scientists to develop a procedural city generation tool in Unreal Engine 5
- Implemented an algorithm to create building from facade image with machine learning
- Created a custom rule language for facade partition in procedural building generation
- Developed multiple building modes ranging from entering rules to tuning parameters
- Designed a curve editor for building footprint modification

Graduate Teaching Assistant — Aug. 2021 – June 2022
University of Pennsylvania — *Philadelphia, PA*
- Mentored 100+ students for Python and Java homework in CIT590: Programming Languages and Techniques
- Hold recitation for 60+ student weekly to solve their quiz and coding exercise questions
- Developed four quiz question sets and code exercises

Projects

Kappa Curve Editor | *Python, Houdini, Redshift* — Feb. 2022 – May. 2022
- An authoring tool in Houdini to create curves with G_2 continuity and local maximum curvature
- Integrated with Pyro solver to create target driven fire and smoke simulation
- Applied local/global solver to calculate control coefficients in real-time

LightPathFinder | *Unreal Engine, Adobe PhotoShop, Adobe Premiere* — Oct. 2021 – Nov. 2021
- A physically based puzzle game using lights and optics as elements
- Player places different optics at certain positions to redirect the light from emitter to receiver

Mini MineCraft | *C++, GLSL, OpenGL, Qt, Git* — Mar. 2021 – May. 2021
- An interactive 3D world exploration and alteration program in the style of the popular computer game Minecraft
- Worked as a team of three to deal with issues from art, engine, and multi-treading respectives
- Optimized the game's rendering process to pass less data to GPU for computation
- Bound static/animated and opaque/transparent textures to the building blocks in game with 2D samplers
- Improved the fluid simulation with modification to the vertex shaders of the rivers blocks generated in game

PathTracer | *C++, Qt* — Jan. 2021 – Apr. 2021
- A photorealistic rendering engine with Monte-Carlo path tracing integrator and photon mapping integrator
- Applied the multiple importance sampling method to reduce variance in the direct lighting estimation
- Adapted the Russian Roulette termination method to reduce render time in the indirect lighting estimation
- Utilized the KD-tree data structure to store meshes and photon information for photon mapping
- Focused on multiple BSDFs to represent materials' property in renders

Technical Skills

Languages:Python, C++, C#, GLSL, Java
Developer Tools: Git, Qt Creator, Unity3D, Unreal Engine, Visual Studio, Houdini, Maya
API: OpenGL