

# Huzhiyuan Long

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## Education

- 2025.9 – 2026.11    **The University of Hong Kong**  
MSc in Computer Science
- 2020 – 2024        **Tongji University**  
BA in Software Engineering

## Publications

- 2023        **SRSSIS: Super-Resolution Screen Space Irradiance Sampling for Lightweight Collaborative Web3D Rendering Architecture**  
**Huzhiyuan Long**, Yufan Yang, Chang Liu, Jinyuan Jia.  
*CAD/Graphics (CCF-C)*, 2023.

## Industry experience

- 2025.5 – 2025.8    **Tencent, LightSpeed Studios. (Game Engine Intern)**
- Reimplemented SHaRC from RTXGI 2 in UE5 to replace Lumen's surface cache as a world-space radiance cache.
  - Conducted controlled experiments to compare the two cache systems, quantify trade-offs, and guide radiance cache optimization.

## Projects

### Real-time Ray Tracing (WebGPU)

- Built a hybrid rendering pipeline on WebGPU that includes V-buffer, ray tracing, denoising, and super-resolution.
- Implemented an SAH-based BVH acceleration structure.
- Reproduced ReSTIR DI & GI for real-time global illumination and integrated SVGF and ReLAX for denoising.

## **Screen Probe Precomputation**

- Part of a collaborative rendering system based on UE5 Lumen.
- Delivered an alternative interface to output screen probes in early stages for pipeline testing.
- Implemented on a Vulkan hardware ray tracing pipeline.

## **Precomputed Visibility Volumes**

- In instanced scenes with Vulkan, precomputed the visible object set and weights for each sample point to form per-cell visible sets.
- Aided scheduling and streaming during real-time client-side model loading.

## **Honors and scholarships**

2022	Undergraduate School-level Scholarship, Third Prize (Tongji University)
2021	Undergraduate School-level Scholarship, Third Prize (Tongji University)

## **Awards**

2022	China Collegiate Programming Contest - Shanghai Collegiate Programming Contest, Bronze Medal
2022	Group Programming Ladder Tournament, Individual Third Prize

## **Technical skills**

### **Programming languages**

C/C++, JavaScript, WGSL, GLSL, Python

### **Tools**

WebGPU, Falcor, UE, Three.js, Vulkan, Blender, Unity

### **Languages**

English, Japanese (JLPT N2)