Zeyu Wang

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Education

University of California San Diego *September 2023 - May 2025*

Master of Science in Computer Science

- **GPA** 4.0/4.0
- **Courses:** Computer Graphics II: Rendering (A+), Physics Simulation (A+), Advanced Image Synthesis (A+), Discrete Differential Geometry (A+)

The Hong Kong University of Science and Technology *September 2019 - July 2023*

Bachelor of Engineering in Computer Science

- **GPA** 3.88/4.3, **Major GPA** 3.94/4.3
- **Awards:** First Class Honors, The BDR Scholarship - Academic Performance, University's Scholarship for Continuing UG Students
- **Courses:** Advanced Computer Graphics (A+), Linear Algebra (A), Computer Vision (A-), Deep Learning in Computer Vision (A)

Work Experience

Tencent Lightspeed Studios (Engine Research Team) *June 2024 - September 2024*

Graphics Engineer Intern

- Responsible for developing tool chains for **Unreal Engine 5**.

HKUST SMART Lab *February 2022 - May 2023*

Undergraduate Intern (Supervised by Prof. Hao Chen)

- Researched **data-efficient deep learning** methods for nuclei **image detection and segmentation**.

Selected Projects

AutoDiff Rigidbody Dynamics Solver *June 2024*

UCSD, CSE291A: Differentiable Programming

- Implemented forward and backward **automatic differentiation** mechanism for the loma compiler and programming language.
- Developed a **rigidbody dynamics** simulation system from the loma language and Python to solve the trajectory from arbitrary user-provided coordinate system and potential energy using **Hamiltonian Mechanics**.

Houdini Miscellaneous Graphics Computing Collection *February 2024 - June 2024*

UCSD, CSE274: Discrete Differential Geometry, CSE291C: Physics Simulation

- A collection of **geometry** computing and physics **simulation** mini-tasks in **Houdini** (Codes written in **VEX** and **Python**).
- Geodesic Distance from Heat Method, Conformal Texture Coordinates, Smoothest Vector Field Assignment from Levi-Civita Connection, Rigid-body Simulation from Hamilton's Principle, Cloth Simulation from Finite Strain Theory, Fluid Simulation from Lattice Boltzmann method.

OptiX Path Tracer *May 2024*

UCSD, CSE168: Computer Graphics II: Rendering

- Built a **physically based Monte Carlo path tracer** from scratch with **OptiX 6.5** in **C++** and **CUDA**.
- Upon which implemented **Bidirectional Path Tracing** and **Multiplexed Metropolis Light Transport**.

LaJolla Renderer Extensions *February 2024*

UCSD, CSE272: Advanced Image Synthesis

- Extended a **C++ physically based Monte Carlo path tracer** (La Jolla renderer) with classic rendering algorithms.
- **Disney Principled BSDFs**: including importance sampling diffuse/metal/glass/clearcoat/sheen components.
- **Volumetric Path Tracing**: **Equiangular Sampling** for homogeneous medium and **Ratio Tracking** for heterogeneous medium.

Whitted-style Ray Tracer *November 2022*

HKUST, COMP5411: Advanced Computer Graphics

- Completed a real-time naive ray tracing logic with diffuse/reflective/refractive materials in **fragment shader** in **GLSL** with **Three.js** library.

Publications

BoNuS: Boundary Mining for Nuclei Segmentation from Partial Point Labels (IEEE Transactions on Medical Imaging) *May 2022 - May 2023*

Yi Lin*, **Zeyu Wang* (Co-first Author)**, Dong Zhang, Kwang-Ting Cheng, Hao Chen

InsMix: Towards Realistic Generative Data Augmentation for Nuclei Instance Segmentation (MICCAI 2022) *December 2021 - March 2022*

Yi Lin, **Zeyu Wang**, Kwang-Ting Cheng, Hao Chen