Simon Wang

Potomac, MD | wang.c.simon@gmail.com | https://simoncwang.github.io

Skills

Programming: Python, Java, HTML, JavaScript (vanilla/React/Node), C, C# (Unity), C++, SQL
ML/AI: PyTorch, HuggingFace, AutoGen, Ollama, OpenCV, OpenAI API, Langchain, Gradio
Tools: GitHub, VSCode, Fusion 360, Docker, Unity, Google Suite, MS Office, MATLAB, Vercel

Education

University of Maryland, College Park, MD
M.S., Computer Science — *May 2025 | GPA: 3.59/4.0*
B.S., Computer Science — *Dec 2023 | GPA: 3.52/4.0*
University Honors, Presidential Scholarship

Work Experience

Research Assistant | University of Maryland | College Park, MD
Feb 2025 – Present

- Working on project leveraging multimodal LLMs, RAG, and multi-agent frameworks like Microsoft Autogen for event sequence analysis and visualizations of domain-specific datasets
- Developing a UI for AI-assisted data analysis using Autogen, FastAPI, React, and Python

Student Initiated Course Facilitator | University of Maryland — College Park, MD
Jan 2023 – May 2023

- Co-taught course on creating custom shaders in Three.js (CMSC398K)
- Prepared course materials and lectured about linear algebra needed for computer graphics
- Graded and gave feedback on homework and coding assignments

Software Development Engineer Intern | Amazon | Seattle, WA
May 2022 – Aug 2022

- Developed quality assurance tools to improve Amazon's Choice recommendation system
- Used Java, Apache Spark, and AWS EC2/S3 to push and test code on Amazon databases
- Collaborated with 20+ software engineers in fast-paced environment with daily meetings

Technical Projects

LLMSpatialLayout | *Jan 2025*

- Improvement and extension to LLM-based spatial layout generation of the paper: Grounded Text-to-Image Synthesis with Attention Refocusing
- Leveraged structured outputs through LLM APIs to create simplified and reliable generation
- Reproduced evaluations using 200+ prompts from paper, improving format accuracy to 100% for all (previous high 98.5%), layout validity by over 3% on small models like Llama2:13B
- *GitHub:* https://github.com/simoncwang/LLMSpatialLayout

MMO: Multimodal Multi-agent Organization | *Oct 2024 – Dec 2024*

- Individual course project for Multimodal Foundation Models (Prof. Jia-Bin Huang)
- Developed a multi-agent framework using multimodal large language models (MLLMs), using OpenAI gpt-4o to coordinate open-source MLLMs through Huggingface Transformers
- Produced an improved benchmark evaluation tool to mitigate inconsistencies in current benchmarking methods to enable more robust comparison of MLLMs
- *GitHub:* https://github.com/simoncwang/MMO
- *Technical Report:* https://simoncwang.github.io/documents/mmo.pdf

Monte Carlo Renderer and Disney BRDF | *Sep 2024 – Dec 2024*

- Implemented Monte Carlo path tracing using PyTorch from course-provided skeleton code
- Utilized concepts from adv. computer graphics course to render with various techniques (MC integration, multiple importance sampling, neural radiosity, inverse rendering)
- Built upon path tracing code to implement the Disney Principled BRDF technique, including 10+ parameters to create fine-grained controllable shading of rendered objects
- *Technical Report:* https://simoncwang.github.io/documents/disneybrdf.pdf

Diffusion-based Generative Video Consistency | *Jan 2024 – May 2024*

- Investigated angles to improving state-of-the-art deep learning topics in a group of 2
- Conducted extensive literature review on diffusion-based video generation and editing
- Proposed and tested a new approach improving upon and combining previous techniques such as neural layered atlases and Uni-ControlNet
- Participated in a within-course mock-conference with two rounds of anonymous peer-reviews and ultimately completed a paper that was accepted by the Professor and TAs
- *Report with rebuttal:* https://simoncwang.github.io/documents/CMSC720_Rebuttal.pdf

VR Classroom | *Jan 2024 – May 2024*

- Ideated and proposed project investigating the potential applications of VR for education
- Led a team of 5 to develop a Unity application to run on the Meta Quest III over the course of a semester by delegating tasks and collaborating with teammates
- Conducted an IRB-approved user study of 30+ participants, presented findings to class and wrote a technical report summarizing the research process and impacts
- *GitHub:* https://github.com/simoncwang/virtualclassroom
- *Technical Report:* https://simoncwang.github.io/documents/vrclassreport.pdf

Publications

Chen Chen, Hannah K. Bako, Peihong Yu, John Hooker, Jeffrey Joyal, Simon C. Wang, Samuel Kim, Jessica Wu, Aoxue Ding, Lara Sandeep, Alex Chen, Chayanika Sinha, Zhicheng Liu. "VisAnatomy: An SVG Chart Corpus with Fine-Grained Semantic Labels." arXiv preprint arXiv:2410.12268 (2024)

Relevant Coursework

Multimodal Foundation Models, Deep Learning, Database Systems, Human-Computer Interaction, XR, Advanced Computer Graphics, Game Programming, Data Visualization, Advanced Algorithms, Data Structures, Applied Probability & Statistics, Linear Algebra, Calculus III