Simon Wang

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Research interests: Machine Learning & AI, Computer Graphics, AR/VR, HCI

Education

University of Maryland **College Park, MD**

M.S., Computer Science *Expected May 2024*

B.S., Computer Science (GPA: 3.52/4.0) *December 2023*

University Honors *2019-2023*

Skills

Programming: Python, Java, HTML, Javascript, C, C# (Unity), C++, SQL

ML/AI: Pytorch, OpenCV, OpenAI API, Langchain, Ollama, FER, Gradio

Software/Tools: GitHub, VSCode, Docker, Unity, Google Suite, MS Office, MATLAB, Arduino

Work Experience

Research Assistant June-December 2023

University of Maryland *College Park, MD*

- Coded software tool to annotate data visualization SVGs
- Used JavaScript, HTML, and Python to develop front-end and back-end of a web page

Student Initiated Course Facilitator January-May 2023

University of Maryland *College Park, MD*

- 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's Choice May-August 2022

Amazon *Seattle, WA*

- Developed quality assurance tools to improve Amazon's Choice recommendation system
- Used Java, Apache Spark, and AWS to push and test code on Amazon databases
- Collaborated with 20+ software engineers in fast-paced environment with daily meetings
- Presented solution ideas and final product to Amazon's Choice team and received feedback

Projects

PyTorch Graphics Renderer - Course Project September-Present 2024

Technologies: Python, PyTorch

- Implementing a rendering system in Python using PyTorch
- Utilize algorithms and concepts learned in advanced computer graphics course to render scenes with various techniques
- Ongoing project working with provided skeleton codebase, currently implementing inverse rendering with deep learning (Adam, automatic differentiation, neural radiosity)

AI Art Advisor – Personal Project July-August 2024

Technologies: Gradio, Python, OpenAI API, HuggingFace Spaces GitHub

- Created a full-stack web application using Python, OpenAI API for multi-modal LLM analysis, and Gradio for front-end
- Demonstrated capability of language models to understand art, and positive application of artificial intelligence for helping artists improve rather than replacing them
- Published app to HuggingFace Spaces for public sharing, and conducted user-study on art students from UMD to measure impact (X% said it was helpful)

Diffusion-based Generative Video Consistency - Course Research Project January-May 2024

Technologies: Python, PyTorch, SLURM, Overleaf Paper with Rebuttal

- Investigated angles to improving state-of-the-art deep learning topics in a group of 2
- Conducted exhaustive 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

VR Classroom - Course Research Project Leader January-May 2024

Technologies: Unity, C#, Meta Quest III GitHub

- Ideated and proposed a research project investigating the potential applications of virtual reality 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

Relevant Coursework

Deep Learning, HCI, XR, Computer Graphics, Game Programming, Data Visualization, Advanced Algorithms, Data Structures, Applied Probability/Statistics, Linear Algebra, Calculus 3