Issei Mori

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Summary of Qualifications

- Undergraduate 3D Graphics Researcher with 6+ years of engineering working experience.
- Developed a path tracing volume renderer of microorganisms using DirectX shader.
- 2+ years of working experience using C++ as a research assistant.
- Contribution to THREE.js 3D Library with WebGL renderer.
- Recipient of the Chancellor's Undergraduate Research Award.

EDUCATION

University of California, Santa Cruz | Bachelor of Science, Computer Science   July 2017 – June 2021

- 3.95/4.0 GPA : Total of 8 quarters of Dean's Honors, currently within Summa Cum Laude for 2021 Graduates (3.92)
- Chancellor's Undergraduate Research Award 2020 Recipient
- Pursuing a M.S. degree in Computer Science starting Fall 2021.

WORK EXPERIENCE

Software Engineer Intern | NIKKEI America Inc.   August 2020 – Present

- Developed an open-source software to depict gender gap in the news media by measuring female representation in news articles using deep learning models, in collaboration with AFP, Reuters, etc.
- Used an open-source dataset of human faces to train our detection model.
- Extracted names and identified their gender in our articles for the past 11 years, using NLP models and Wikipedia API.

Backend Software Engineering Intern | Infinite Options   April 2020 – August 2020

- Deployed a system to manage donations, orders, and delivery for the local foodbanks.
- Designed and set up an RDS database and APIs using Flask, AWS lambda, gateway.

Tutor for Intro Computer Graphics | University of California, Santa Cruz   September 2019 – December 2019

- Supported undergraduate students for learning the basics of Computer Graphics and WebGL.

RESEARCH EXPERIENCE

Physarum Telam: Volumetric Path Tracer (isseim.com/physarum-telam/sm)   August 2020 – Present

- Developed an interactive 3D visualization of cosmological data, rendered as a photo-realistic translucent yellow blob mimicking the appearance of Slime Mold using physically-based volumetric path tracing.
- This work proves the relationship between scientific data and the nature-inspired computational method used to interpret it.
- Implemented the appearance model in a custom GPU-based Monte Carlo path tracer with DirectX HLSL shaders, which simulate the light transport through the volume and surface interactions.
- Developed the interactive Web application to showcase the rendered images. Users can navigate the data rendered with a standard 3D volume visualization technique and reveal the corresponding pre-rendered images with the appearance model.

Flow-based / Machine Learning Method of Detecting Rip Currents   April 2018 – Present

- Developed a tool to detect rip currents from videos based on the computed optical flow field, achieving the highest accuracy compared to other flow-based methods.
- Accelerated the computational speed by three times to achieve real-time processing using the CUDA GPU implementations.

Face Models: How good does my starting data need to be?   November 2020 – January 2021

- The first research paper that quantified and analyzed the base-line reconstruction accuracy of a face model as a function of source data type commonly used in the domain.
- Wrote MATLAB scripts to compare face models reconstructed from each input data type.

PUBLICATIONS&APPEARANCES

- "Automated Rip Current Detection with Region based Convolutional Neural Networks", Coastal Engineering Journal, 2020
- Speaker: "How might we leverage AI to understand, identify and mitigate newsroom biases?", JournalismAi Festival, 2020