Patrick Ribas

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Education

Rochester Institute of Technology

- Bachelor of Science in Computer Science, Minor in Math, 3.87 GPA
- Master of Science in Computer Science, Computer Graphics cluster, 4.0 GPA
- Expected Graduation December 2023

Work Experience

Computer Graphics Research Intern, Siemens May 2022 – December 2022

- Ported OpenGL and CUDA milling machine simulations to the Nvidia Omniverse platform
- Wrote a GPU-based particle system visualizer in Warp Python to output the results of a machine learning-based fluid solver and compare to existing CFD software
- Implemented a real-time fluid solver using the FLIP method in Warp Python

Geometry Algorithm Development Co-op, Spectral Sciences January 2021 – June 2021

- Wrote Python and C++ code to automate initialization for in-house fluid simulation software
- Implemented numerical methods to evaluate physical quantities (i.e. gradients) over a mesh
- Worked with the C++ library Qhull to accelerate geometry processing work, and used Boost.Python to bind C++ code to Python for scientific use
- Built a GUI using tkinter to display the results of rocket simulation software

Sustainability Research Assistant, RIT May 2020 – July 2020

- Worked with existing and novel math models to predict methane emission of anaerobic lagoons
- Used numerical and statistical methods, such as Euler, Monte Carlo simulations, Latin Hypercube Sampling, and Sobol' sensitivity analysis to evaluate models and the uncertainties of their parameters
- Wrote Python code to parse data, evaluate and verify models, and reproduce findings of papers

Skills

- **Programming Languages:** Python, C, C++, Three.js, WebGL, Vulkan
- **Software Development:** Git, Unix, Agile
- **Other:** LaTeX, Research, Paper Reading, Public Speaking, Communication

Projects

Vulkan Link

- Implemented a basic Phong renderer in Vulkan with shading, texturing, and model loading
- Created a basic compute pipeline to calculate and save the Mandelbrot set
- Documented API for CS faculty, describing command buffers, swapchain building, pipelines, etc.

Path Tracer Link

- Wrote a physically-based path tracer in C++
- Supports basic primitives, Monte Carlo sampling, tone reproduction, materials, reflection, and refraction