Joel Gross

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Irvine, California

Work Experience

Cruise Automation
STAFF TECHNICAL LEAD MANAGER
APR 2022 — PRESENT
Tech lead and manager of the Rendering team. Built an RTX-based proprietary ray/path tracing engine for high fidelity sensor simulation (cameras, lidar, radar) used for machine learning data generation. Took the project from prototype stages to full development while building out a team of eight.

Responsible for an Unreal Engine 4-based sensor simulation for End-to-End closed loop simulation.

Responsible for the overall technical direction, architecture, and day-to-day management of the team.

STAFF SOFTWARE ENGINEER
JAN 2022 — MAR 2022
Led a team building an RTX-based proprietary path tracer for high fidelity sensor simulation (cameras, lidar, radar) used for machine learning data generation.

SENIOR SOFTWARE ENGINEER
JULY 2018 — DEC 2021
Responsible for radar and lidar simulation as part of the 3D Simulation Sensors team. Modifications were made to Unreal Engine 4 to create a custom sensor architecture to model the Cruise car and its various sensors. Personally responsible for major re-architecture of the system, performance improvements, and development of the sensor simulations.

Lightstorm Entertainment
SOFTWARE ENGINEER
NOV 2016 — JUNE 2018
Designed and developed a proprietary real-time particle system and suite of tools surrounding the system for use in large-scale virtual production on the Avatar sequels. The system was built using CUDA and C++ and integrated into the pipeline for use on stage during motion capture as well as for previs shot creation. Additionally, responsible for shader development and the creation of workflows to assist artists with their daily production tasks.

DreamWorks Animation
SOFTWARE ENGINEER - SHADING R&D
OCT 2015 — NOV 2016
Responsible for developing and maintaining DreamWorks' proprietary shaders on REYES and MCRT renderers. Examples include hair, fur, feathers, eyes, and a wide variety of utility shaders.

Projects

High-frequency algorithmic cryptocurrency trader
FALL 2017 — FEBRUARY 2018
Built a Machine Learning-based high-frequency trading bot that successfully traded hundreds of times a day in a live trading environment. The bot was trained on historical data of several different cryptocurrencies and was able to accurately predict trends over 70% of the time.

Fluid Simulation
FALL 2014 — SPRING 2015
Written from scratch using CUDA, C++, and OpenGL. Simulated fluid and foam particles with realistic motion in real-time. The main resource for the fluid physics is "Position Based Fluids" (Macklin 2013). Extended this framework to support fluid-cloth coupling.

Thermo
FALL 2014
Developed a puzzle-platformer using Actionscript 3 in a team of 6. Personally responsible for game direction, gameplay programming, and art. Played by over 50k people across Newgrounds and Kongregate.

Skills

Programming
C++ • FLUENT, 12 YEARS
C • FLUENT, 12 YEARS
Python • FLUENT, 10 YEARS

Tools & Platforms
CUDA
OpenGL/GLSL
OptiX
Linux
Microsoft Windows
Unity
Maya
Unreal Engine 4
Git
Perforce

Education

Cornell University
FALL 2014 — SPRING 2015
GPA: 3.78

Graduate School
M.Eng — Computer Science

SUNY Binghamton University
FALL 2011 — SPRING 2014
GRADUATED IN 3 YEARS
GPA: 3.67

Watson School of Engineering
BS — Comp Sci — Cum Laude

Harpur College of Arts & Sciences
BS — Economics — Cum Laude