

Joel Gross

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Irvine, California

Work Experience

Cruise Automation

STAFF TECHNICAL LEAD MANAGER

APR 2022 — PRESENT

Tech lead and manager of a team building an RTX-based proprietary path tracer 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 the team.

Responsible for the overall architecture, planning, and day-to-day management of the team (including contractors).

STAFF SOFTWARE ENGINEER

JAN 2022 — MAR 2022

Leading 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 a 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

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. Simulates fluid and foam particles with realistic motion in real-time. Implemented several research papers resulting in a framework capable of running 128k fluid particles and up to 500k foam particles at 30 fps. 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