

Aaryaman Vasishtha

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INTERESTS

Light Transport Simulation • FOSS
Machine Learning • Real-Time Rendering

EDUCATION

UNIVERSITY OF TOKYO

MASTERS IN INFORMATION SCIENCE AND TECHNOLOGY

Tokyo, JP

Computer Graphics Group

Advisor: Toshiya Hachisuka

Graduated March 2021

GPA: 3.83

PUNE UNIVERSITY

BE IN COMPUTER ENGINEERING

2012-2016 | Pune, IN

First Class with Distinction

Pune Institute of Computer Technology

LINKS

Github:// [jamm](#)

BitBucket:// [jamm](#)

Quora:// [Aaryaman-Vasishtha](#)

COURSEWORK

Realistic Image Synthesis

Computer Graphics

Multithreaded and Distrib. Computing

Algorithms and Data Structures

Advanced Operating Systems

Special topics in HCI

SKILLS

PROGRAMMING

• C • C++ • Python • MATLAB • Lua

• Bash • x86 Assembly • Kotlin

VERSION CONTROL

Git • Perforce

TOOLS

vim • Visual Studio • Singularity

OpenGL • OpenCL • HIP • CUDA

• SLURM • MySQL • Jupyter

Cassandra • Kubernetes • Docker

OPEN SOURCE

GOOGLE SUMMER OF CODE

Student in 2015 and 2016 for WineHQ

Mentor - 2018 WineHQ, 2020 PCL

MISC. OSS CONTRIBUTIONS

Mitsuba 2 • nouveau • ScummVM

Chromium • Point Cloud Library

Appleseed • Zandronum

EXPERIENCE

ADVANCED MICRO DEVICES RESEARCH ENGINEER | TOKYO, JAPAN

April 2021 - Present

- Research on bringing path tracing to real-time rendering using Machine Learning.
- Ported Radeon ProRender to HIP within 48 hours and improved CPU performance up-to 73%, GPU up-to 25%.
- Successfully proposed future GPU HW enhancements after performing analysis of online ML workloads such as instant-ngp, Neural Radiance Caching (Ported both to HIP).
- Released Orochi - runtime linking for both HIP and CUDA.
- Wrote fully-fused MLP kernels for current and next-gen RDNA3 GPUs, backing the gen-on-gen AI ops uplift of 2.7x.

RAKUTEN | SOFTWARE ARCHITECT/LEAD ENGINEER | TOKYO, JAPAN

October 2016 - March 2019

- Awarded for being among the top 1% of the Technology Division employees.
- Mentored and onboarded new engineers and interns from University of Waterloo and other Canadian universities. Setup of training projects and relevant infrastructure which were later deployed into production.
- Designed, developed and deployed large scale, zero-downtime, cloud-native core identity services utilizing Kubernetes and Cassandra serving billions of worldwide Rakuten logins daily. Overall savings of ¥12 million annually.
- Organized weekly department-wide code and security reviews.
- RIT: Deep learning for Soft-segment background removal of e-commerce images.

UBISOFT | INTERN GAMEPLAY PROGRAMMER, PUNE STUDIO

January 2016 - May 2016

- Worked on gameplay and engine layers, fixing flaky issues while remastering South Park™: The Stick of Truth™ to PS4 and Xbox One.

PROJECTS

PATH TRACER | PHYSICALLY BASED RENDERER USED FOR RESEARCH

2019 - Present

- Cross-Platform and Written from scratch using C++17.
- Current features: Live preview, multi-threaded rendering, Parallel SAH BVH and SBVH. Integrators: Path Tracing with Next-Event-Estimation and MIS, PSS-MLT, PRT using Spherical Harmonics.
- BSDFs supported: Diffuse, Phong, Rough conductor using GGX/Beckmann microfacet model, Dielectric and Metal.

WINEHQ | OPEN-SOURCE COMPATIBILITY LAYER FOR RUNNING

WINDOWS PROGRAMS ON POSIX-COMPLIANT OS'S

2015 - Present

- Re-implemented Microsoft's Direct3D Retained Mode, a 3D scene graph API in C resulting in improved compatibility across legacy applications and games. Contributions included in Valve's Proton layer for Steam on Linux.
- Wrote tests against Microsoft's undocumented API while adhering to black-box reverse engineering methodology.

SCHOLARSHIPS & AWARDS

2019-2020 JASSO - Monbukagakusho Honors Scholarship

2017 Rakuten New Graduate Award