

Praveer Tewari

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Projects

3D Renderer

OPENGL FORWARD RENDERING ENGINE

Singapore

June 2022

- Built a 3D renderer with OpenGL in my spare time. Features and techniques: Model Loading, Instancing, CubeMap, Blinn-Phong Shading, Shadow Mapping, HDR. Code and demo can be viewed [here](#).

Ray Tracer

C++ TOY RAY TRACER

Singapore

July 2022

- Got excited about raytracing and built a toy ray tracer in C++, for my own learning purposes. Features: Sphere model support, Antialiasing, Ray scattering, Depth of field, Directional and Point lights. Code and renders can be viewed [here](#).

Table Tennis Motion Tracking

2D TRACKING AND 3D OPENGL VISUALISATION

Singapore

November 2018

- Captured relative 2D positions of a table tennis ball as it moves on videos of table tennis games.
- Used three sets of 2D positions from three videos taken at different angles to reconstruct table tennis ball trajectory in 3D space by solving a linear system of camera projection equations.
- Wrote an OpenGL program to visualise the reconstructed trajectory of the table tennis ball in 3D space that could help players review their serves and improve their gameplay.

The rest of my projects can be viewed at: github.com/praveer922

Experience

Hudson River Trading

TRADING OPERATIONS DEVELOPER

Singapore

September 2019 - Present

- Senior member in the Singapore operations team, overseeing our live trading environment and first responder to production issues during Asian market hours.
- Designed and implemented order/trade monitoring tool in python that ensures our trading algorithms behave per various market regulations. The tool also ended up being used by our US/EU teams for a total of over 20 markets worldwide.
- Lead the integration and roll-out of a new library that provides API for any kind of tradability information firmwide. Coordinated with various teams in US, Europe and Asia to determine requirements and ensured a safe rollout of the new system. The library is being used now by every trading team in the firm.

National University of Singapore

RESEARCH ENGINEER, SECURITY

Singapore

May 2019 - August 2019

- Worked on a C++ Virtual Pointer Exploit Test Suite
- The test suite can benchmark the effectiveness of a defense mechanism(e.g. in a C++ compiler) against Virtual Table Hijacking attacks by launching various exploits and observing their success.

Playphone Inc.

SOFTWARE ENGINEERING INTERN

Sunnyvale, CA

Aug 2017 - Jul 2018

- Backend engineer working on a tournament-based mobile gaming platform built with the Java Spring framework.
- Introduced a new 'challenge' mode and a 'leaderboard' tournament format for players. Designed database tables and wrote backend API to support these features using Apache Cassandra, Solr and Redis.
- Internationalized the platform by building an admin tool with an interface for storing translations of all strings being displayed on our front-end applications. The tool is used by our content team to provide translations for all our users overseas.

Government Technology Agency of Singapore (GovTech)

SOFTWARE ENGINEERING INTERN

Singapore

May 2017 - Jul 2017

- Joined the Android team working on OneService, an app used by thousands of citizens to report municipal issues in Singapore.
- Created a reusable image-displaying component that was adopted by developers across the app for four different features.
- Improved user submission feature by creating a custom image-editing component that allows users to draw on and edit their photos taken through the app.

National University of Singapore

UNDERGRADUATE TEACHING ASSISTANT

Singapore

August 2016 - November 2016

- Led weekly lab sessions for a dozen students in the course CS2010 - Data Structures and Algorithms II.
- Covered lecture material, explained approaches to solving problem sets, and graded their problem set solutions.

Education

National University of Singapore

Singapore

BACHELOR OF COMPUTING (HONOURS) IN COMPUTER SCIENCE

2015 - 2019

- Coursework: Computer Graphics, Data Structures and Algorithms, Software Engineering, Operating Systems, Computer Networks, Computer Security
- Member of the NUS film club, where I directed and edited a short film that ended up being screened at a local film festival

Stanford University

Stanford, CA

NON-DEGREE OPTION

August 2017 - July 2018

- Took courses in Computer Science and Entrepreneurship through Stanford Center for Professional Development
- Coursework: Computer and Network Security, Grade: A. The Spirit of Entrepreneurship, Entrepreneurial Thought Leader Seminar, Grade: A.

Skills

PROFICIENT

- C++, OpenGL, Python

FAMILIAR WITH

- MySQL