Wong Pei Xian

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Education

National University of Singapore **Aug 2020 – May 2024**
Bachelor of Computing (Comp. Sci.), Focus in Computer Graphics & Games, Parallel Computing [GPA: 4.83, Dean's List] *Singapore*

Skills and Relevant Coursework

General Programming Languages:
C++, Rust, Python, C#, Javascript/Typescript, C, Java

Graphics/Parallel Computing API:
OpenGL, CUDA, DirectX11, Vulkan, WebGL (three.js)

Shader Languages: GLSL, HLSL
Game Engines: Unity, Unreal Engine 4.0, Ubisoft Anvil
Databases: MongoDB, PostgreSQL
Web: React Node, ExpressJS, HTML/CSS, Websockets
Environments: Windows, Linux

Experience

Squarepoint **Aug 2024 – Present**
Software Developer | *C++, Python, bash* *Singapore*
- Unified the automation of recording of trade actions on option expiry, averaging about 20,000 of such trades per week from dozens of markets.
- Implemented similar workflows to handle trade action automation for several new financial instruments.

Squarepoint **Jan 2024 – Apr 2024**
Software Development Intern | *C++20, ProtoBuf* *Singapore*
- Implemented metrics collection, a core module for an internal application framework used throughout the department.
- Enabled developers to easily log application performance metrics in both Python and C++ and easily visualize them via Prometheus, allowing several programs to improve performance efficiency by at least 50%.

Ubisoft **Aug 2023 – Nov 2023**
Technical Art Intern (Assassin's Creed: Shadows) | *C#, C++, Python* *Singapore*
- Built in-engine tools with Windows WPF UI (C#, XAML) for speeding up artists' workflow.
- Supported asset management, validation and documentation with core development team.

EAS-AI **May 2023 – Aug 2023**
Backend Software Developer, DevOps, MLOps | *Rust (tokio, axum, criterion), PostgreSQL, Python (locust.io)* *Singapore*
- Designed and built an search engine for large document collections ingested from companies' existing internal databases.
- Combined Machine Learning models and custom implementations of traditional lexical search algorithms for indexing of documents.
- Implemented the pipeline for document ingestion, processing, encoding, storage and lookup, ensuring the scalability, performance of the multithreaded server and cross-domain accuracy of the search engine.

Google **May 2022 – Aug 2022**
Intern Backend Developer | *Python, gRPC* *Taiwan (remote)*
- Designed and implemented a bug diagnosis RPC service to parse modem device logs and Android Debug Bridge bug reports to identify bugs.
- Delivered unit tests and integration tests to ensure the service works across the internal network.

BODYX Productions [live-app] **Dec 2021 – May 2022**
Fullstack Web Developer, DevOps | *ReactTS, MongoDB, Websockets* *Singapore*
- Designed, built and deployed a real-time web app from scratch, supporting chat functionality and interactive room controls designed for experiential theatre, REST API for user management and integration with EventBrite.

Teaching Assistant (Various Modules) **Jan 2022 – Present**
Student Tutor | *Intro to Graphics, Intro to Algorithms* *Singapore*
- **CS3211 Parallel and Concurrent Programming** – Designing assignments for maximizing parallelism in a restaurant simulator.
- **CS4247 Graphics Rendering Techniques** – Includes multi-pass rendering, deferred shading, shadow mapping, path tracing, PBR, radiosity.
- **CS3241 Computer Graphics** – Includes graphics pipeline, rasterization, texture mapping, raytracing [Slides].
- **CS2040S Data Structures and Algorithms**

Portfolio

CapSized Hockey: A salary cap and roster tracker for NHL | ***SvelteTS, MongoDB, Python*** **since Jun 2024**
- Full stack development of a clean, modern interface tracking active and historical player salary breakdowns, trades, team roster compositions and payrolls etc. Includes features to mock player trades and buyouts, and actively developing a GM (General Manager) mode.

Modelling shadow effects of mesh objects in Neural Radiance Fields (NeRFs) | *Python, C++, CUDA* **Jun 2023 – Apr 2024**
- Proposed a method to render shadows in a scene with both machine-learning driven volume-rendered NeRFs with traditional mesh objects.
- Built an engine that places virtual objects in NeRF environments with correct direct/indirect lighting interactions.

Doodle's Diary – A tower defence game [itch.io] | *Unity, C#, HLSL* **Feb 2022 – Nov 2022**
CodeITSuisse Challenge 2021 | *Python* | *Team* 6^{th} **Sep 2021**
A New Lower Bound for Young's Cosine Series [FLW19] **Jul 2017 – Feb 2019**

Leadership

ExxonMobil Campus Concerts (EMCC) Crew **Aug 2022 – May 2023**
Training Director (Nominated for Student of the Year – Tan Eng Kiam Awards [link]) *National University of Singapore*
- Planned and coordinated a comprehensive training program in technical theatre management and technology, in particular stage lighting.

Publications

[FLW19] J. Fong, T. Lee, and P. Wong. "A functional bound for Young's cosine polynomial". In: *Acta Mathematica Hungarica* 160 (June 2019). DOI: 10.1007/s10474-019-00960-3.