

# WONG PEI XIAN

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## Education

### National University of Singapore

Aug 2020 – Present

*Bachelor of Computing (Comp. Sci.), Focus in Computer Graphics & Games, Parallel Computing*

*Singapore*

GPA: 4.80, DEAN'S LIST

## Skills and Relevant Coursework

**Games/Graphics Programming:** Unity, Unreal Engine, OpenGL, shaders (GLSL), CUDA, WebGL (three.js)

**Web/Software Development:** sockets.io, MongoDB, PostgreSQL, ExpressJS, axum, React, Node, HTML/CSS, git

**Programming Languages:** C/C++, Rust (with tokio), C#, Python, bash, Javascript/Typescript, Java

- CS4247 Graphics Rendering Techniques
- CS3247 Game Development
- CS3211 Parallel Computing
- CS4231 Parallel and Distributed Algorithms

## Experience

### EAS-AI

May 2023 – Present

*Machine Learning Intern, DevOps/MLOps | Rust (tokio, axum, criterion), PostgreSQL, Python (locust.io)*

*Singapore*

- Designed and built a search engine capable based semantic similarity of queries against large document collections ingested from companies' existing internal databases.
- Custom implementations of lexical search algorithms in SQL for ranking indexed 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 in Python **SIMAnalyzer**, a bug diagnosis RPC service parsing Android Debug Bridge bug reports and modem logs to identify common bugs.
- Built robust unit tests and integration tests to ensure the service works across the internal network.

### BODYX Productions [live-app]

Dec 2021 – May 2022

*Solo Fullstack Web Developer, DevOps | Typescript, MERN, Websockets*

*Singapore*

- **Stack:** MongoDB, ExpressJS, ReactTS, NodeJS (MERN), next.js, Websockets (sockets.io), Docker (Ubuntu 20.04)
- 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.
- Deployed server with NGINX as reverse proxy and TLS Configuration with LetsEncrypt.

### Teaching Assistant (Various Modules)

Jan 2022 – May 2023

*Student Tutor | C++, Java*

*Singapore*

- **CS4247 Graphics Rendering Techniques** – Includes multi-pass rendering, deferred shading, shadow mapping, path tracing, PBR and radiosity [Notes].
- **CS3241 Computer Graphics** – Includes graphics pipeline, rasterization, texture mapping, raytracing [Slides].
- **CS2040S Data Structures and Algorithms**

### A New Lower Bound for Young's Cosine Series [FLW19]

Jul 2017 – Feb 2019

*Research Intern, A\*Star Young Researcher Award (2019)*

*NUS High School, Singapore*

## Project Portfolio and Competitions

### Doodle's Diary – A tower defence game [itch.io] | Unity, C#, GLSL

Feb 2022 – Nov 2022

- Combined shaders (HLSL) in post-processing pipeline to create custom hand-drawn visual effect.
- Improved scalability of previous enemy random path generation algorithm alongside player's in-game progression.
- Revamped overall UI/UX, as well as creating all promotional material and drawing all 2D art assets.

**Personal website [trxe.github.io] | GLSL, Vite, WebGL, three.js, HTML/CSS/Typescript**

May 2022

**CodeITSuisse Challenge 2021 | Python | Team 6<sup>th</sup>**

Sep 2021

## Leadership

### ExxonMobil Campus Concerts (EMCC) Crew

Aug 2022 – May 2023

*Training Director*

*National University of Singapore*

- Planning and producing a comprehensive training programme in technical theatre management and technology.
- Competent in stage lighting technology and board programming on GrandMA2.

## 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.