

Dylan Chua

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PROFILE

Imperial College London 2nd Year Mechanical Engineering student with a passionate interest in software development and simulations. Programming experience gained from internships and hobby/part-time projects.

EDUCATION

Imperial College London

MEng Mechanical Engineering

Oct 2022 – Present

London, United Kingdom

- 1st Year: Dean's List, Top Scorer in Professional Engineering Skills
- Modules: Thermofluids, Solid Mechanics, Computing, Mechatronics
- Extra-curricular: German

WORK EXPERIENCE

3D Software Development Intern

Simulation & Training Systems Hub, Defence Science and Technology Agency

Jul 2023 – Sep 2023

- Developed a novel pipeline in Python for the automatic segmentation of 3D Tiles of the world, a 3D format allowing storage of massive datasets, to be used in simulations and data analyses
- Implemented semantic segmentation through the use of machine learning, specifically a transformer, trained on satellite imagery to label each pixel of the 3D texture
- Analysed and deconstructed specifications of 3D formats glTF & 3D Tiles to construct format readers and exporters to traverse a 3D Tileset and subsequently export a new tileset with individual files storing the metadata
- Maintained modularity and version control to allow team members to be able to substitute their segmentation methods effortlessly
- Co-authored a published write-up on Medium detailing the engineering process of the pipeline, and presented to the Director of the department
- Skills: Python, System integration, Machine learning

Simulations Software Development Intern

Command, Control and Communications Development, Defence Science and Technology Agency

Feb 2022 – Jul 2022

- Designed a high fidelity simulator using C# in Unity meant to replicate the actual environment and physics of drones in tracking and battle
- Achieved streaming of drone footage via RTSP by feeding simulator data into FFmpeg, as well as remote control of the hunter drone through a networking library ZeroMQ
- Enabled the team to quickly test Computer Vision models on the output video stream to identify the target drone, and freely experiment with parameters for the PID Controller to navigate the hunter drone
- Reduced the need for live testing using actual drones, improving efficiency and workflow for the entire team
- Added extra functionality to randomly generate images of a drone in the environment to produce labelled synthetic data for Computer Vision training
- Wrote an article on Medium documenting the simulator and showcasing its utility in testing a Computer Vision model and a PID Controller
- Skills: C#, Unity, Computer networking, UI/UX, 3D Modelling, Teamwork

Assistant Counselling Specialist

SAF Counselling Centre

Feb 2020 – Feb 2022

- Selected as the main specialist in extracting client data from the Jira system using Jira Query Language and analysing the data to be presented and reported to stakeholders
- Initiated massive workflow automation through Visual Basic for Applications scripts in Excel and Outlook to draw information from the Jira system database and rapidly generate emails
- Organised and scheduled client appointments for counsellors, and manned the 24-Hour Counselling Hotline
- Managed the team of specialists as the appointed leader, which involved interviewing applicants, overseeing the training progression of newer members and assigning the team for the duty roster
- Skills: Data analysis, Database querying, Team management, Counselling and Active Listening

PROJECTS

Game Tracker Discord Bot

- Developed a tracking application linked to Discord that retrieves the user's in-game statistics and information, which is stored in a PostgreSQL database.
- Deployed the application entirely on cloud computing resources
- Skills: Python, SQL, API, Cloud computing with PaaS

Web3 Website

- Designed the front-end of a shrine-inspired \$BONK burning website, including art assets
- Skills: React, CSS, UI/UX

3D Globe Visualiser

- Visualised my travel history data on an interactive 3D globe using React and a 3D library ThreeJS
- Skills: React, ThreeJS

Full Stack Video Player

- Built a full-stack application similar to YouTube with a backend Node server hosting and serving videos, and a frontend React webpage to display the gallery of videos as well as video playback
- Skills: React, TypeScript, Vite, NodeJS

Reddit Bot

- Created a Reddit bot to access the API and triggers a randomly generated reply when the keyword is present in a new post or comment
- Skills: Python

AWARDS AND ACHIEVEMENTS

Mechanical Engineering Prize for Outstanding Academic Performance (Professional Engineering Skills)	2023
Nanyang Technological University IdeasJam – Best Pre-University	2022
National University of Singapore Hack&Roll – Top Prize	2022
Astrochallenge – 16 th Individual Placing, 2 nd Place, Best Observation	2019
Singapore Science and Engineering Fair – SUTD Sharp Award in Aviation	2019
Singapore Astronomy Olympiad – Bronze	2018
Singapore Junior Physics Olympiad – Gold	2017

SKILLS

Programming: Python, C#, TypeScript, HTML/CSS/React, R, \LaTeX

Software: Microsoft 365, Git, VSCode, OriginLab, Unity, Adobe Photoshop, Adobe Premiere Pro

3D Design: SOLIDWORKS, ANSYS, Blender

Languages: English (First Language), Mandarin

Interests: Puzzles, Cooking, Imperial College Baseball and Softball