

Duan Yihe

duan.yihe@u.nus.edu | +65 83013422 | linkedin.com/in/duanyihe | github.com/Alanduan21

Projects

Da Vinci Surgical Simulator | C#, Unity Oct 2024 – Present

- Modelling a VR simulator in **Unity** to replicate the Da Vinci Surgical Robot as an educational tool for NUS Medicine students.
- Utilising the Obi softbody package to simulate realistic physics for fat tissues and blood vessels in the surgical environment.

Kopi Teh Revolution | FPGA, Verilog, Vivado Oct 2024 – Nov 2024

- Developed a rhythmic game on the Basys3 **FPGA** Board using **Verilog HDL** as part of a team project for the Digital Design course.
- Implemented user input handling, game scoring, and health systems display via **PWM-controlled** LEDs.
- Prototyped inter-board communication using **UART protocol** for global score display on 7-segment LEDs.

Subject 404 | C#, Unity, Git/Github, Command Line May 2024 – Aug 2024

- Engineered an immersive 3D VR horror game for Meta Quest 2 using **Unity**, implementing AI-driven enemy behavior, NPC animation, and interactive mechanics via the **XR Interaction Toolkit**.
- Leveraged **OOP** principles in development and **GitHub** for CI/CD and version control.
- Awarded the Artemis (Highest Achievement) level under NUS Orbital program.

AskMe | Java, XML, Android Studio Dec 2024 – Jan 2025

- Designed Android app UI in **Java** with touch-triggered animations, creating an intuitive interface aimed at helping seniors in Singapore navigate technology more comfortably.

Co-Curricular Activities

Electrical Sub Team, BumbleBee Autonomous Systems | Altium, STM32CubeMX May 2024 - Present

- Architecting a Power Switching Board **PCB** for the BumbleBee AUV (Autonomous Underwater Vehicle), ensuring precise power delivery to other PCBs and the computing stack, integrated with a power supply monitoring feature.
- Designed **EMI filter circuits** on the PCB to provide clean and stable power to noise-sensitive sensors, improving power supply integrity.
- Evaluated and selected **STM32 microcontroller** chip for PCB design to meet GPIO requirements for power management signals and I2C needs for inter-PCB data transmission.
- Refabricated the thruster PCB for ASV (Autonomous Surface Vehicle) that won 1st place at RoboX 2024.

Electrical Sub Team, Hornet 9.0 | C++, Platform IO, Visual Studio Code Sept 2023 - Apr 2024

- Contributed to the development of an AUV, achieving top 15 in the Singapore Autonomous Underwater Vehicle Competition.
- Focused on **CAN** communication protocols between STM32 microcontrollers and NVIDIA Jetson Xavier to ensure secure data transmission.

Project Connecto, NUS MedTech Society | C#, .NET, Arduino Feb 2024 - Sept 2024

- Built a sensor GUI for a mechanical mouse tailored to assist muscular dystrophy patients at NUSH, utilising C# on the .NET framework.
- Prototyped the GUI using Visual Studio to display potentiometer values received from an **Arduino UNO**, ensuring accurate functionality and intuitive user interaction.

Treasurer, NUS ECE Undergraduate Student Council June 2024 - Present

- Managed the finance team for ECE Internship and Career Fair 2025, overseeing sponsorship tiers, budgets, and invoices for sponsors.

Education

National University of Singapore August 2023 – Present

- Year 2, Bachelor of Engineering in Electrical Engineering, with a minor in Quantitative Finance
- **GPA:** 4.55/5.0 (expected 1st Class Honours)
- **Coursework:** Integrated Digital Design, Embedded Systems, Signal Processing, Electronic Circuits, Software Engineering, Mobile App Programming, Neuroscience