ZENG ZHEQI

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Available for Full-Time Employment from June 2026 Onwards

EDUCATION

National University of Singapore | B.Eng in Computer Engineering (HON) **Aug 2022 – May 2026 [Expected]**

- **GPA:** 4.2 / 5.0
- **CS Core:** Software Engineering, Data Structures & Algorithms, Computer Networks, Computer Organization, Concurrent & Parallel Programming
- **AI/ML:** Machine Learning, Neural Networks, Big Data Systems
- **Hardware:** Digital Design, Signals and Systems, Real-time Operating Systems

University of Washington | Student Exchange Program **Sep 2025 – Dec 2025**

- **GPA:** 3.73 / 4.00 (Dean's List)
- **Relevant Courses:** Database Systems, Web Programming, Artificial Intelligence, Algorithms Design & Analysis

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Java, C#, JavaScript/HTML/CSS, SQL, Python, Go, Rust, Verilog
- **Framework:** Next.js, React, Node.js, Express.js, MSSQL, ROS2, Keras, TensorFlow, Unity, Keil RTX5
- **Tools:** Git/GitHub, Linux, Docker, Podman, Jira, Confluence, Tableau, Visual Studio, VS Code, IntelliJ

WORK EXPERIENCE

Continental Automotive Singapore | Robot Navigation Software Engineer Intern **May – Oct 2024**

- Automated integration tests using Python and shell scripts, streamlining development and testing processes.
- Designed and executed automated benchmarking experiments using Python and shell scripts to evaluate and fine-tune trajectory planner configurations.
- Analyzed experimental telemetry data to optimize parameters for improved navigation smoothness and reliability.
- Conducted *regression tests* in the simulated gazebo/ROS2 environment to ensure consistent robot performance across updates.
- Rectified over 100 C++ code vulnerabilities in memory management, exception handling, type safety etc., significantly enhancing system reliability and stability for the autonomous mobile robot.
- Collaborated between cybersecurity and engineering teams to align on software quality standards/best practices by presenting comprehensive static code analysis findings and engineering constraints.

Land Transport Authority Singapore | Asset Management (Data & Analytics) Intern **May – Jul 2025**

- Optimized Tableau dashboards for faster performance by analyzing data relationships, simplifying calculations, and reorganizing filters, improving accessibility for stakeholders.
- Built data pipelines using Python to clean, transform, and align maintenance records across multiple railway systems, improving data quality and consistency.
- Developed and maintained automation tools using Python Windows API to streamline reporting workflows and reduce manual effort across the analytics team.
- Liaised across teams to understand domain-specific requirements and communicated findings through regular meetings and presentations to stakeholders.

PROJECTS

VerdeX (NUS Fintech Summit Finalist Team) | Full Stack Developer **Jan 2026**

- Architected a decentralized Real-World Asset (RWA) marketplace web application for carbon credits on the XRP ledger within a 48-hour hackathon timeframe, awarded 1st Prize in the BGA (Blockchain for Good Alliance) Track by solving critical market transparency issues.
- Built the Issuer Portal and Marketplace using Next.js and TypeScript, delivering a modern, intuitive interface for organizations to mint and trade carbon credits within a serverless environment.
- Implemented trustless Atomic Swap logic within the client-side application using Crypto-Conditional Escrows, enabling secure, non-custodial exchange of XRP and Carbon Credits without relying on intermediate servers.

AR Laser Tag (Capstone Project) | Software Developer **Jan – Apr 2025**

- Co-designed a distributed IoT system utilizing an Ultra96 FPGA SoC as a central game engine and multiple sensors and Android devices as edge nodes.
- Built the AR visualizer subsystem for Android using Unity and Vuforia Engine to support immersive multiplayer interactions.
- Implemented robust event-driven logic for shooting mechanics and hit detection, ensuring strict sequence control and state consistency.
- Integrated real-time player statistics using MQTT-based networking, ensuring low-latency synchronization of health, shields, and damage states across multiple devices.
- Optimized real-time rendering performance by managing particle system overhead, maintaining high frame rates on mobile devices while enhancing visual feedback.

- Conducted rigorous stress testing for high-concurrency and weak-network scenarios (latency, packet loss) to validate and improve system stability and high availability.

RTOS Robotic Car | Hardware Engineer **Mar – Apr 2024**

- Engineered the hardware interface between the NXP FRDM-KL25Z, ESP32, and motor drivers, executing precise soldering and circuit design to ensure reliable signal integrity and power distribution.
- Mapped and configured complex GPIO assignments to interface sensors and actuators with the MCU, resolving pin conflicts to enable simultaneous peripheral operation.
- Programmed a synchronized music playback function on the NXP Freedom KL25Z board using real-time task scheduling to coordinate audio signals with robot movement.
- Applied bare-metal programming techniques in C++ to control low-level hardware peripherals, optimizing the system for real-time performance constraints.

DinEz - Restaurant Management System | Java Developer **Jan – Mar 2024**

- Designed and implemented the command parser feature using regular expressions, enabling flexible user inputs and error handling.
- Implemented sales statistics feature to provide insights into orders, revenue, and bestsellers.
- Assisted in project management, handling releases, issue tracking, and milestone planning.

Alex to the Rescue | Team Lead / Software Engineer **Jan – Apr 2023**

- Engineered a tele-operated search-and-rescue robot by integrating a heterogeneous computing architecture (Raspberry Pi 4 & Arduino Uno), utilizing ROS nodes to process 2D LiDAR SLAM for real-time mapping in GPS-denied environments.
- Architected a distributed robotic control system, decoupling high-level SLAM algorithms (Raspberry Pi) from real-time actuator control (Arduino) to minimize latency and ensure process isolation.
- Designed a fault-tolerant UART communication protocol in C featuring custom packet serialization, handshaking, and checksum to guarantee data integrity over noisy serial lines.
- Implemented a multi-threaded control loop on the Raspberry Pi, separating telemetry data ingestion from user command processing to achieve asynchronous, non-blocking teleoperation.

LEADERSHIP EXPERIENCE

Harmonica Ensemble | President (Anderson Serangoon Junior College) **Jan – Dec 2021**

- Directed organizational activities including exco meetings, student orientations, and concert coordination, earning the Outstanding Contribution Award for leadership excellence.