Rubesh Suresh

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EDUCATION

Bachelor of Engineering (Honours) — National University of Singapore **Aug 2022 – Present**

Major in Mechanical Engineering, Specialisation in Robotics

- Notable Coursework: Linear Algebra & Calculus, Engineering Principles, Engineering Modelling, Manufacturing Processes, Machine Learning, System Dynamics Modelling, Project Mgmt, Design Thinking

Major in Computer Science, Specialisation in Software Engineering

- Notable Coursework: Programming Methodology, Data Structures and Algorithms, Software Engineering [Cohort top 10%], Computer Organization, Software Engineering for Modern App Platforms [CS3217]

University Town College Programme **Aug 2022 – May 2024**

- Pursued a special general education track at Tembusu Residential College
- Notable Coursework: Gaming Life, Technologies and Ageing in Singapore

WORK EXPERIENCE

ST Engineering **Aug 2024 – Jan 2025**

Software Engineer (Incoming)

- Usage of Generative AI-on-Edge technology for smart city applications.

Singapore Civil Defence Force **Aug 2020 – Feb 2022**

Firefighter (Section Commander, Sergeant–1)

- Frontline emergency response team for fire, rescue and medical emergencies at Changi Fire Station
- Responded to various emergency calls across eastern Singapore as part of SCDF 2nd Division
- Certified in basic cardiac life support and hazardous material (HAZMAT) mitigation response

PROJECTS

TowerForge [https://github.com/sp4ce-cowboy/TowerForge] **Mar 2024 – May 2024**

- Designed and developed a grid-based tower defense game with an event-driven architecture
- Designed and implemented a custom storage architecture to sync local and remote storage (Firebase)
- Set up CI/CD pipeline using Github Actions for the purposes of automating workflow and builds
- Presented at the 24th NUS STePS (SoC Term Project Showcase) representing a highly competitive advanced software engineering module, CS3217, with Optiver as the course (and event) sponsor.

SpacePeggle [https://github.com/sp4ce-cowboy/SpacePeggle] **Jan – Mar 2024**

- Designed and developed a Peggle clone in with ~10KLoC in Swift and SwiftUI for iOS environments
- Designed and implemented a Level designer, Game Engine and a 2D Physics Engine from scratch in Swift
- Enabled interoperability between Swift and Objective-C code using the dynamic Objective-C runtime

CruelMaps [https://github.com/sp4ce-cowboy/cruel-maps] **Jan 2024**

- Designed and developed a mobile application to provide customised travel itinerary in React Native with Expo Go for cross platform testing and deployment as part of NUS Hack'n'Roll 2024,
- Wrote Javascript code to query OpenAI's GPT-4 model and return AI generated waypoints

Artificial Consciousness [https://github.com/sp4ce-cowboy/artificial-consciousness] **Aug – Nov 2023**

- Techno-philosophical exploration of the future of the computer-machine interaction paradigm
- Designed and implemented an application that can programmatically modify its own source code
- Demonstrated runtime dynamic meta-programming without process interruption using the Unix Shell
- Wrote programs and scripts in shell (Bash) to facilitate data persistence and file-I/O operations.
- Awarded the Best Work Prize (Miscellaneous) 2023/2024 by Tembusu Residential College

UniCa$h [https://sp4ce-cowboy.github.io/tp/] **Aug – Nov 2023**

- Finance tracking application for University students built using Java 11, JavaFX and Gradle
- Personal portfolio page with all contributions: https://sp4ce-cowboy.github.io/tp/team/sp4ce-cowboy.html

ChatterBox [https://sp4ce-cowboy.github.io/ip/] **Aug – Sep 2023**

- Created a task management desktop application with ~2KLoC in Java 11, JavaFX, Gradle, and JUnit
- Used JavaFX to build an innovative user interface

dashBoard [https://github.com/sp4ce-cowboy/dashBoard] **Nov – Dec 2022**

- Prototypical implementation of a hierarchical life management system intended to maximise productivity

- Proof-of-concept intended to demonstrate the viability of a quantified, gamified productivity system
- Created a CLI desktop application with ~500LoC in Python 3 in procedural programming style

Autonomous Robot [https://github.com/sp4ce-cowboy/autonomous-robot] **Aug – Nov 2022**

- Designed and engineered an autonomous robotic vehicle that can traverse a obstacle course without human assistance, powered by an Arduino microcontroller.
- Wrote 100LoC (embedded C++) to ensure optimal interaction between ultrasound sensors and driving motors

AquAlarm [https://github.com/sp4ce-cowboy/AquAlarm] **Jan 2019**

- Designed and engineered an alarm clock that utilises pneumatic and hydraulic pressure differential to facilitate electronically actuated high-velocity fluid extrusion, powered by an Arduino Microcontroller
- Representing Victoria Robotics-Makers Club (VJC) at NUS Hack'n'Roll 2019 (Annual Hackathon)

Medibit [https://github.com/sp4ce-cowboy/medibit] **March 2019**

- Designed and engineered an automated medication dispenser to improve medication adherence in the elderly using the Micro:Bit micro-computer.
- Emerged as one of the top 10 teams in Singapore at the Inno:Bit Challenge 2019 organized by ASEAN Youth Organization, representing Victoria Robotics-Makers Club (VJC).

OceanX [https://github.com/sp4ce-cowboy/OceanX] **April – July 2016**

- Designed and engineered an autonomous submersible rover supporting 6-axis motion control, equipped with various environment monitoring sensors powered by an Arduino Uno microcontroller, to monitor the ecological conditions of Victoria School's Koi pond, as part of the School's Social Innovation Programme.
- Awarded Bronze at the East-Zone A-Star Science Fair.

AWARDS & CERTIFICATIONS

Meta iOS Developer Professional Certificate [www.linkedin.com/in/rubesh-suresh] **Dec 2023 – Present**

- Awarded by Meta via the Coursera Platform, completed 3 out of 12 individual courses thus far

Best Work Prize (Miscellaneous) AY2023/2024 Semester 1 **Apr 2024**

- Awarded by Tembusu Residential College for the "Artificial Consciousness" project

TECHNICAL EXPERTISE

Application Development for Desktop Environments

- Java (11, 17) for CLI-based and GUI-based software development in desktop environments
- JavaFX to create graphical user interfaces for desktop applications
- JUnit 5 for unit testing and integration testing, TestFX for UI testing
- Javadoc to write, generate and host documentation for Java packages and deploying on static webpages
- Gradle for build management, GitHub Actions for CI/CD, and Codecov for code coverage analysis
- Python3 for CLI and GUI (tKinter) desktop application development

Native Application Development for Apple Platforms

- Using Swift for cross-platform software development for Apple platforms in OOP, POP, and FP paradigms
- Interoperability between Swift code and Objective-C code using the Objective-C runtime
- Familiar with Cocoa Touch API, Foundation frameworks including UIKit
- Using SwiftUI and UIKit to create application user interfaces for apple platforms
- Familiar with the MVC, MVVM, and VIPER software architectures to model and build applications
- Using FileManager and Firebase (Google) for local and remote data persistence and synchronization
- Using XCTest to perform unit testing, UI testing, and integration testing

Unix System Administration and Low-Level programming

- Using Shell (Bash, zsh) to automate system processes
- Using C to write low-level programs with memory management
- Translating Assembly language (MIPS) code for RISC architectures into C code and vice versa

Cross-Platform Development

- Using React Native and Expo to deploy cross platform applications

Machine Learning and Data Science

- Using python, pytorch, scikit, and numpy for ML applications, RStudio and Radiant for data analysis

Engineering

- Using SOLIDWORKS and Fusion360 for designing 3D models and generating 2D engineering drawings
- Using the Logisim software to interpret and design low-level logic circuits
- Using the Arduino microcontroller for embedded electronics programming