MUHAMMAD NURAZIM BIN ROIZAN

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SUMMARY

Highly motivated and adaptable fresh graduate with a BSc in Computer Science, specializing in robust software solutions and OOP principles. Proven ability to deliver full-stack projects using Ruby on Rails and Java, working within Agile methodologies.

EDUCATION AND QUALIFICATIONS

University of Sheffield *Sept 2022 – July 2025*
BSc with Class Two Division One Honours in Computer Science
Relevant Modules: Advanced Algorithm, 3D Computer Graphics, Cybersecurity in Action, The Internet of Things, Software Testing and Analysis, Robotics, Logic in Computer Science

INTEC Education College *May 2020 – May 2022*
A Levels: Computer Science (A*), Mathematics (A*), Physics (A*), Further Mathematics (A)

Sekolah Sultan Alam Shah *Jan 2015 – Sept 2019*
Malaysian Certificate of Education (including GCE 0 Level English-1119): 6A+, 3A

TECHNICAL SKILLS

- **Programming Languages:** Java (Expertise in OOP), C++ (Embedded Systems, Firmware), Ruby, Python, Embedded C, Haskell
- **Web Development:** Ruby on Rails (Full-Stack), HTML5, CSS, JavaScript
- **Database & Version Control:** SQL (Fundamental Queries), Git (Version Control), GitHub
- **Software Methodology:** Agile (Scrum, Iterative Development), Software Development Lifecycle (SDLC), Object-Oriented Programming (OOP), Requirements Analysis
- **Testing & QA:** Test Automation, Manual Testing, Systematic Testing Techniques (Black-Box, White-Box), Test Case Generation, Code Analysis
- **Tools & Platforms:** Unphone (ESP32-based), Arduino, Sensor Integration (IMU), Docker

PROJECTS

Dissertation Project: Interactive Visualization for Graph Theory

- Designed and implemented a complex visualization tool in Java to simulate the k-Pebble Game and the 1-Weisfeiler-Leman (1-WL) Algorithm, addressing the fundamental computer science problem of Graph Isomorphism.
- Utilized Object-Oriented Programming (OOP) principles and software design patterns to structure the standalone desktop application, ensuring robustness and modularity.
- Developed a robust, interactive GUI using Java Swing and the GraphStream library for dynamic graph rendering, focusing on an intuitive user experience to visualize complex data structures.
- Conducted manual testing and evaluation, confirming the tool's value as a pedagogical aid for demystifying abstract algorithms, showcasing full-lifecycle software delivery.

Software Hut: Client-Facing E-commerce Web Application

- Engineered and deployed a full-stack, client-facing e-commerce platform using the Ruby on Rails framework in a team environment, managing the solution from conception to final delivery.
- Applied Agile methodology (Scrum/XP) to manage the project lifecycle, collaborating directly with a real client to analyze business needs and define the comprehensive Software Requirements Specification (SRS).
- Managed software quality assurance (SQA) by designing comprehensive testing strategies and maintaining software standards; utilizing version control (Git) for collaborative team development.

IoT Project: Custom Embedded Game Controller

- Developed core functionality using Embedded C++ firmware for an ESP32-based device, demonstrating strong proficiency in low-level programming and hardware integration.
- Integrated and configured the onboard IMU sensor (accelerometer/gyroscope) to reliably detect physical gestures, showcasing practical skills in sensor data processing and signal tuning.
- Extended an existing GFX-based UI library to develop a custom visual interface, reinforcing skills in API utilization and UI integration.

Software Testing & Analysis Module (Applied Skills)

- Applied systematic black-box and white-box testing techniques (e.g., boundary value, equivalence partitioning) to evaluate software correctness and quality.
- Developed scripts and utilized tools to automate software testing tasks (e.g., test case generation) and increase QA efficiency.
- Measured and evaluated key software metrics and test metrics to assess code quality and testing coverage.

Research & Personal Coding Initiatives

- **Research paper:** Conducted in-depth research and analysis of the CRYSTALS-Kyber (ML-KEM) algorithm, detailing its operational mechanics and security profile as a NIST standard Post-Quantum Cryptography solution.
- **GeeyBoard:** Developed custom keyboard firmware using Embedded C++ for a Microcontroller to create a specialized Human Interface Device (HID), demonstrating low-level hardware interfacing.
- **PiYak:** Engineered a Progressive Web App (PWA) using Vanilla JavaScript; implemented a Service Worker and leveraged the Google Forms API to create a zero-cost, serverless backend to track daily bowel movement and period.

PORTFOLIO

- NurazimRoizan.github.io/project
  - A multi-pages application built with HTML, CSS, and JavaScript, hosted on GitHub Pages. The site serves as a showcase of my front-end development skills and features several of my key projects.