

# Ashan Ranasinghe

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## Interests

My interests include Backend Engineering, Cybersecurity, and Artificial Intelligence & Machine Learning. I focus on developing efficient, scalable backend systems and building secure software solutions. I am also driven by the application of machine learning and deep learning techniques to real-world engineering problems.

## Education

### University of Peradeniya

BSc Eng Hons. Computer Engineering

April 2023 – April 2027 (Expected)

Current GPA: 3.62/4.0

### Mahinda College, Galle

G.C.E. Advanced Level Examination

Physics (A), Chemistry (A), Combined Mathematics (B)

## Work Experience

### Undergraduate Teaching Assistant | University of Peradeniya

Apr 2025 – Jul 2025

- Assisted junior undergraduates in CO1810 – Programming for Engineers II, covering Object-Oriented Programming, advanced Python, Java, C practices, memory management, and data structures.
- Guided students through software engineering lifecycle concepts including requirements gathering, system specification, and group-based software projects.
- Coordinated laboratory sessions and provided targeted support to bridge the gap between abstract coding and practical engineering applications.

### Editor | VK Chemistry

2024 – Present

- Designed and rendered precise scientific figures, molecular structures, and experimental schematics using Edraw to enhance manuscript clarity and readability.
- Performed document typesetting using LaTeX and MS Word Styles, maintaining consistent publication layout standards across educational materials.

### Independent Cryptocurrency Trader & Market Analyst

2020 – Present

- Conduct active technical and fundamental analysis across cryptocurrency markets to inform longer-term positioning decisions.
- Utilise TradingView for advanced charting and strategy back-testing, Binance for execution, and CoinMarketCap for market data aggregation and fundamental screening.

## Selected Projects

### AI-Driven Cryptocurrency Market Analysis – Independent Research

Duration: 2024 – Present Individual Self-Directed Research

An ongoing self-directed research initiative exploring how AI and machine learning methods can be applied to cryptocurrency market analysis, with a focus on bridging practical trading knowledge with data-driven predictive modelling.

Technologies: Python, PyTorch, TensorFlow, Pandas, NumPy, TradingView (data source), Binance API.

- Investigating machine learning architectures including LSTM and transformer-based models for time-series price prediction and trend identification in volatile crypto markets.
- Exploring sentiment analysis techniques applied to social media and news streams as supplementary signals for fundamental analysis.
- Leveraging five years of hands-on trading experience with technical and fundamental analysis to ground research hypotheses in real market behaviour.

### PeraVerse – Crowd Management System

Duration: Jul 2025 – Nov 2025 Team Based Software Project

An integrated crowd management system built and deployed for Engex 2025, enabling real-time spatial navigation and visitor flow monitoring across the university engineering exhibition.

Technologies: React.js (frontend), Tailwind CSS, JavaScript, HTML, Docker (containerisation), Postman (API testing).

- Contributed to system integration, end-to-end testing, and production deployment of the crowd management platform.
- Identified and resolved critical defects in the map rendering and navigation modules, significantly improving system reliability ahead of the live event.

## **G.U.A.R.D. – Freshwater Aquarium Monitoring and Alerting System**

*Duration: Feb 2026 – Present* *Team Based Cyber Physical Systems Project*

A real-time aquaculture monitoring system that continuously measures water quality (pH, turbidity, water level, temperature) across multiple tanks and triggers automated actuators (feeder, pumps, LED indicators) while issuing pre-emptive owner alerts before fish welfare is compromised.

Technologies: React.js (frontend), Express.js (backend), JavaScript, C (microcontroller firmware), Docker, MongoDB, MQTT/Mosquitto (IoT messaging), Prisma ORM, REST APIs.

- Architected and implemented backend REST API services using Express.js, handling real-time sensor data ingestion, tank state management, and actuator command dispatch.
- Developed the threshold-based real-time alerting system to notify owners of critical water quality changes before irreversible harm occurs.
- Implemented a secure authentication and login system with session management, supporting multi-user access control across the platform.

## **Technical Skills**

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**Programming Languages** Python, Java, JavaScript, C, SQL

**Frontend Development** React.js, Tailwind CSS, HTML5

**Backend Development** Express.js, Spring Boot, REST APIs

**Databases** PostgreSQL, MongoDB, MySQL

**Cloud & DevOps** AWS, Docker, Kubernetes, Git, GitHub, GitKraken, CI/CD Basics

**Machine Learning** PyTorch, TensorFlow, NumPy, Pandas

**Tools & Platforms** VS Code, IntelliJ IDEA, Postman, Adobe Illustrator, AutoCAD, Linux

**Other** LaTeX, Canva, Edraw, MQTT/Mosquitto

## **Leadership & Volunteer Experience**

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**Editor | Hackers' Club – University of Peradeniya** Jun 2026 – Present

- Manage the club's social media platforms, planning and publishing regular content on cybersecurity developments and technology news for a university-wide audience.
- Lead and mentor the editorial team in producing creative, technically accurate posts and articles using Adobe Illustrator and Canva.

**Member | Hackers' Club – University of Peradeniya** Jun 2025 – Jun 2026

- Established the club's social media presence from inception, creating platforms dedicated to cybersecurity knowledge sharing and tech awareness.
- Mentored the editorial team in content design and visual communication, contributing to consistent and professional digital output across platforms.