Nipun Chamodya Bandara, Maha Mudiyanselage

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Education

Master of Information Technology (Software Development Major, Data Science Minor)
University of Southern Queensland | Jan 2024 – Dec 2025

Bachelor of Computing (Software Engineering)
Curtin University | 2020 – 2023

Technical Skills

Programming Languages: Python, Java, JavaScript, C++, C, C#, .NET
Frameworks & Libraries: ReactJS, NodeJS, HTML5, CSS, XML, SOAP
Data Management & Analysis: SQL, MongoDB, GraphQL
Data Science Tools: Pandas, Scikit-learn, R
Machine Learning: TensorFlow, PyTorch, Supervised and Unsupervised Algorithms
Project Management: Jira, GitHub
CI/CD and Cloud Services: Jenkins, Git, Docker, Kubernetes, Azure, AWS, Google Cloud
System Administration: Windows Server, Domain Controller, DNS, Active Directory, Microsoft IIS
Relevant Coursework: Data Structures and Algorithms, Software Engineering Testing, Cyber Security, Design Patterns, Statistics for Quantitative Researchers, Machine Learning, Data Mining for Business Analytics and Cyber Security, Blockchain Fundamentals, Intelligent Multimedia (Computer Vision & Audio Analysis), Artificial Intelligence for Business

Software Engineering Project Experience

Reef Watch | reef-watch.vercel.app
Tech Stack: React.js, Tailwind CSS, Python (FastAPI), TensorFlow, Keras (CNN models), OpenCV, PostgreSQL, Leaflet.js, Chart.js

- Developed **ReefWatch**, an AI-powered web platform using **React, FastAPI, TensorFlow**, and **AWS** for automated monitoring and real-time analysis of coral reef ecosystems.
- Built a **convolutional neural network (CNN)** achieving **90%+ accuracy** in classifying coral health status from **underwater imagery**.
- Integrated interactive **geospatial mapping (Leaflet.js)** and **data visualization dashboards (Chart.js)** to provide actionable insights for marine researchers.
- Implemented an **automated alert system** notifying researchers **of critical reef health changes**, improving **conservation response times by over 50%.**

Titans Tickets | titans-tickets.com
Tech Stack: JavaScript, ReactJS, NodeJS, ExpressJS, MongoDB, Docker, Email and Text Services, QRScanner

- Designed and developed a **full-stack ticket selling platform** for a sporting event clients with ~1000 attendees per year, supporting seamless ticket purchases and digital validation of tickets using QR scanner.
- Built a **client-facing portal** with user authentication using mobile number with OTP (OAuth2) to enable ticket selection and real-time email confirmations with dynamic QR codes.
- Engineered a **QR scanning admin platform** for event staff to validate tickets using device cameras; verification synced with the backend in real-time to mark entries as "entered" and prevent re-entry using same ticket.
- Architected and consumed **RESTful and GraphQL APIs** to manage ticket inventory and user data.
- Implemented **caching strategies** with React Query for fast data fetch and low-latency UI rendering.
- Ensured security by integrating **JWT-based authentication** for both users and admins, with role-based access control.
- Deployed using **Docker and Kubernetes**, with CI/CD pipelines on **Vercel for two separate frontends and Render** for backend which is scalable and reliable hosting.
- Monitored system performance and optimized database queries for high-traffic periods during pre-event peaks.

Avanoa Web Application | avanoa-frontend.vercel.app

Tech Stack: JavaScript, ReactJS**,** WebGazer.JS, Sass, NodeJS, ExpressJS, MongoDB, Azure, EmailJS

- Alternative communication platform for motor disability people using their eye movements.
- By using the **WebGazer library** tracking eye movements to interact with the functionalities of the application.
- The application is based on **JavaScript** following the **MERN stack.**
- Project was developed following **the Agile framework** and as **MVP versions** for an actual client as a final-year project.
- Relevant documentations such as **SRS**, **Technical Investigation Summary**, **Software Architecture Specification** and **Project planning** were made.

Gaming Tournaments Mobile Application

Tech Stack: Android, Java, Firebase, SQLite

- Android Application using **JAVA** and **Firebase** for online gaming tournament management, where players and organizers manage their functionalities.

Peer-to-Peer Application

Tech Stack: C#, ASP.NET, MVC

- **Peer-to-Peer desktop application** to post jobs in **Python** and execute jobs of each peer automatically.
  1. **ASP.Net MVC Web server WPF** (.net framework) with **multi-threaded** (remoting server)
  2. **ASP.Net Core Web Application**

Data Science Project Experience

Depth of Anesthesia (DoA) Index Design

Tech Stack: Python, scikit-learn, pandas, NumPy, Jupyter Notebook

- Developed a novel Depth of Anesthesia (DoA) index using EEG-derived features, targeting enhanced intraoperative patient monitoring in clinical settings.
- Conducted feature selection, model tuning, and performance evaluation using Pearson correlation, R^2, and Bland-Altman plots to validate model robustness on withheld testing data.
- **Supervised machine learning techniques**: Linear Regression and Random Forest to model BIS-like index from EEG features (x1–x7), ensuring the model output ranged from 0 (deep anesthesia) to 100 (awake).
- **Unsupervised learning algorithms:** K-means clustering and Gaussian Mixture Models on a separate dataset of 4965 EEG segments for data clustering, labeling states A/B to infer depth of anesthesia without supervision.
- Integrated both supervised and unsupervised findings to design a **hybrid ensemble model** combining linear regression and random forest using weighted averaging predictors for enhanced predictive accuracy and resilience.

Languages

English (Fluent), Sinhala (Fluent)

References

1. **Dr. Zhi Chen**

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