Danujan Sivasundaralingam

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Profile

A passionate 3rd year Computer Engineering undergraduate with a keen interest in **Machine Learning** , **Software Engineering** and **DevOps**. Actively seeking an internship opportunity to gain practical experience and contribute to meaningful projects.

Education

University of Peradeniya **Mar 2021 – Present**
BSc.Eng(Hons.) in Computer Engineering CGPA: 3.30/4.00

J/Chavakachcheri Hindu College **Jan 2011 – Aug 2019**
GCE Advanced Level Examination - 2019 Results: 3A , Z-Score: 2.1617

Technical Skills

Programming Languages	Java, Python, C
Web Development	HTML5, CSS, React.js, Spring Boot
Libraries	Numpy, Pandas, Matplotlib, scikit-learn, OpenCV
Database	MySQL
Cloud Platforms	AWS (EC2,RDS) , Google Cloud

Volunteer Projects

Predicting Inpatient Bed Demand with Machine Learning | Group | **Oct 2023 - Present**

- We address the healthcare overcrowding problem by utilizing Machine Learning, aiming to optimize resource planning in the Emergency Department and Post-Anesthesia Care unit for enhanced efficiency and improved patient care.
- Developed a machine learning model to predict daily bed demand, aiding hospital management in resource planning, specifically focusing on a burn center.
- Utilized patient admission data from January 2015 to October 2020, including variables such as arrival and discharge times.
- Created an ensemble model combining LSTM and CNNs, achieving a Mean Absolute Error (MAE) of 2.45 ± 0.27, Mean Squared Error (MSE) of 9.43 ± 1.77, and an R^2 of 0.63 ± 0.06.
- Implemented cross-validation to ensure robustness and generalizability.
- Anticipate that integrating this model into hospital management practices will assist in more effective resource and staff management.
- **Techniques**: K-Means Clustering, Support Vector Regression, ARIMA, LSTM networks, and CNNs.

Projects

Rainfall Prediction System | Group | **Apr 2023 - Present**

- Developed a machine learning-based system to predict rainfall measurements for various locations using historical weather data.
- Conducted extensive feature engineering to enhance the dataset, implementing and comparing multiple machine learning models to identify the best-performing approach for rainfall prediction.
- Evaluated model performance using metrics such as Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and R-squared (R^2), achieving the best results with the Gradient Boosting Regressor (GBR) model, which had an MSE of 7.45, MAE of 1.07, and R^2 of 0.93.
- Integrated the selected model into an MLOps pipeline to facilitate continuous integration, delivery, and monitoring, ensuring scalability, maintainability, and timely predictions.
- **Technologies**: Python, pandas, scikit-learn, Jupyter Notebook
- **Techniques**: Gradient Boost Machines (GBR), Decision Trees, Random Forests, SARIMA, XGBoost, and LSTM

Automated Hydroponics System | Group | Nov 2023 - Jan 2024

- Developed an IoT-based Automated Hydroponics System with web and mobile applications for monitoring and controlling system conditions, as well as managing resources.
- Contributed to develop the backend system for both web and mobile applications, mainly focused on **user management, authentication** , **deployed the frontend and backend applications** in a cloud platform and managed data using a MySQL database on AWS RDS.
- Implemented a CI/CD pipeline using GitHub Actions, Docker, and AWS EC2 to automate the deployment process and ensure continuous integration and delivery.
- **Technologies**: React.js, Spring Boot, Flutter, MySQL, JWT, AWS, Docker, GitHub actions, CI/CD pipelines
- **Security practices**: Role based user authentication, Refresh tokens

Engineering Education Unit Web Application | Group | Aug 2023 - Oct 2023

- A web application that combines robust security features with a responsive user interface and an exceptional user-friendly **editable admin page.**
- Developed robust frontend and backend functionalities for admin interfaces; successfully deployed the application on a Linux server.
- **Technologies**: React.js, Spring Boot, MySQL, CSS, JWT
- **Accessible on** : eeu.pdn.ac.lk

School Attendance Management System | Group | Mar 2023 - Jun 2023

- A versatile and user-centric platform that enhances the school's attendance tracking and communication process.
- Contributed to designing the attendance marking page with automated email sending facilities.
- **Technologies**: React.js, Spring Boot, MySQL, CSS

Achievements

Hackfest | Champions | Sustainable Ecosystems Category — **2023**
48 Hour inter-university Hackathon — University of Peradeniya

ACES Coders v10.0 | Participant — **2023**
12 Hour competitive programming competition — University of Peradeniya

Certifications

Supervised Machine Learning: Regression and Classification — DeepLearning.AI
Advanced Learning Algorithms — DeepLearning.AI
Foundations of Project Management — Google
Introduction to Artificial Intelligence — Indonesia Cyber Education Institute
Computer Networks — Indonesia Cyber Education Institute

Community Involvement

Blog Writter, Medium — Jan 2024 - Present
Executive committee member, ACES, University of Peradeniya — Jan 2024 - Present
Web Development Team, Hacker's Club, University of Peradeniya — Jan 2024 - Present

References

Prof. Roshan G. Ragel | roshanr@eng.pdn.ac.lk
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