MANUGA HEWA PATHIRANA

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PROFESSIONAL SUMMARY

Resourceful and detail-oriented Software Engineering student with a robust foundation in database management, software design, and agile methodologies. Demonstrates strong abilities to translate academic insights into practical solutions in fast-paced development environments. Passionate about driving innovation and enhancing efficiency through database optimization and scalable software architectures. Committed to delivering high-quality results and continuously advancing technical skills to meet evolving industry demands.

EDUCATION

Western University
London, ON
2021 – 2026 (Expected)

Program: Bachelor of Science in Engineering (B.E.Sc) Specializing in Software Engineering
Relevant coursework: Data Structures and Algorithms, Software Design, Database Management, Web Technologies, Microprocessors and Microcomputers, Operating Systems, and Computer Network Applications

Academic Projects:

Distributed Asynchronous Distance Vector Routing
Language Used: Python 3.10.1
Package(s) Used: asyncio, socket, and numpy
Design and Implementation: Developed a distributed asynchronous distance vector routing protocol to simulate network routing dynamics.

- Algorithm Development: Created and tested routing algorithms in Python focusing on initializing distance tables and updating routing information dynamically.
- Real-time Handling: Managed link cost changes and message exchanges between nodes to reflect real-time network conditions.
- Validation: Utilized a network emulator to validate functionality, including debugging and optimizing routing procedures.

SMTP Mail Client Development
Language Used: Python 3.10.1
Package(s) Used: socket, base64, smtplib, google-auth, and ssl
Custom Mail Client: Engineered a mail client to interact with mail servers using the SMTP protocol, focusing on low-level socket programming.

- Core Functionalities: Implemented server connection, message formatting, and error handling from scratch, initially without high-level libraries.
- Enhancements: Incorporated Python's smtplib for streamlined mail operations.
- Security: Configured Google API for authentication and modified Gmail security settings for script access.

Product Recommendation System
Language Used: Python 3.9.10
Package(s) Used: pandas, numpy, scikit-learn, and numba
Development: Created a recommendation system using CSV datasets to generate personalized product suggestions.

- Algorithm Design: Designed algorithms to analyze user behavior and preferences for tailored recommendations.
- Data Processing: Implemented data cleaning, transformation, and analysis to ensure accuracy and relevance of suggestions.
- Performance Optimization: Enhanced system performance through efficient data handling and algorithm optimization, significantly improving user engagement and satisfaction.

Technical Proficiency

[HTML, CSS, JavaScript]

Advanced Knowledge: Proficient in HTML for structuring web content, CSS for designing responsive and visually appealing interfaces, and JavaScript for adding interactive elements and dynamic functionalities.

Responsive Design: Expert in creating mobile-first designs using media queries and frameworks like Bootstrap and Tailwind CSS.

JavaScript Frameworks: Skilled in using JavaScript libraries and frameworks such as React for building complex, single-page applications (SPAs).

reSTful Services

API Design Principles: Adhered to reST principles by utilizing standard HTTP methods (GET, POST, PUT, DELETE) and status codes for clear communication between client and server.

Resource Modeling: Defined resources and their relationships to accurately represent the data model, ensuring intuitive and consistent API endpoints.

Frameworks and Libraries: Proficient in popular frameworks such as Flask and Express.js. Additionally have experience with Spring boot and Sinatra for rapid development and deployment of reSTful services.

ReST API-based Application:

- Developed a comprehensive web application designed to streamline data management processes.
- Utilized HTML, CSS, JavaScript for the front-end, and Node.js for the back-end API.
- Improved data retrieval speed and user interaction efficiency.

MERN Stack Application:

- Designed and deployed a full-stack application on the Google Cloud Platform to meet specific client requirements.
- Utilized MongoDB, Express.js, React, Node.js.
- Successfully integrated cloud services, enhancing scalability and reliability of the application.

Superhero ReST API and Front-End

API Design and Implementation:

- Developed a robust ReST API using Node.js and Express.js to manage superhero data stored in JSON files.
- Ensured data integrity and security through thorough input sanitization and validation.
- Technologies Used: Node.js, Express, JSON.

Front-End Development:

- Created a dynamic and user-friendly interface for interacting with superhero data.
- Enabled searching, viewing, and managing superhero information seamlessly.
- Developed using HTML, CSS, JavaScript.

CRUD Operations:

- Implemented Create, Read, Update, and Delete functionalities for custom superhero lists.
- Enhanced user control over data management.

Deployment:

- Deployed the application on AWS EC2.
- Utilized asynchronous operations for real-time data retrieval and interaction.
- Used AWS EC2, Node.js, Express.

Node.js Socket and Server-Side Programming:

Application Development:

- Skilled in developing both client-server and peer-to-peer applications using Node.js.

Projects: Built applications that support real-time communication and data exchange.

Custom Protocols:

- Implemented specialized protocols like Image Transport Protocol (ITP) and kadPTP.
- Used: Node.js, custom protocol design.
- Ensured efficient data transport and routing in networked environments.

Client Management:

- Managed multiple client connections and configured routing tables to optimize network performance using Node.js and WebSockets.
- Enhanced the scalability and reliability of networked applications.

Career Projects

DURB

Front-end Developer

May 2024 – Present day

Project: DURB 'How to Play' page

Language Used: JavaScript (React, CSS, HTML)

Package(s) Used: React, react-slick

Project Overview: Developed an interactive 'How to Play' page to guide new players through game mechanics and strategies.

- **Ability Display:** Implemented a scrollable container displaying abilities categorized by 1, 2, and 3-credit values. Each ability is color-coded and includes detailed information such as name, description, usage, and associated imagery.
- **Interactive Tutorial Slides:** Created a step-by-step tutorial explaining key game concepts, including nodes, edges, energy growth, and attacking strategies. Integrated a custom slider to navigate through the tutorial.
- **Secondary Ability Information:** Added functionality to display additional details for reusable abilities, ensuring players have all necessary information for strategic decision-making.
- **User Experience Enhancement:** Designed the page to dynamically reveal the abilities section after the tutorial is completed, enhancing the onboarding process for new players.