Raj Shah

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Education

University of Waterloo Sept 2024 – Present
Bachelor of Computer Science *Major GPA: 4.0*

Related Coursework: Algorithm Design and Data Abstraction (Advanced Level), Tools and Techniques for Software Development, Designing Functional Programs, Calculus and Linear Algebra

Skills

Languages: Java, Python, C, C++, TypeScript, JavaScript, HTML, CSS, Racket, Haskell, SQL, R, Scheme

Tools & Frameworks: React, npm, Git, Svelte, Next.js, Node.js, Vite, Scikit-learn, Apache, Firebase, CI/CD, AWS, OpenCV, NumPy, Angular, PyTorch, Docker

Experience

Software Engineer | *MesoMat* May 2024 – Aug 2024
Hamilton, ON, Canada

- Designed software for MesoMat's tire management platform, using tire sensor data to implement features such as **leak detection**, **critical failure alerts**, and **fuel cost optimization**, ultimately enhancing fleet safety.
- Built and maintained cloud-based software systems, including **RESTful APIs** to ensure seamless user access to tire condition analytics.
- Implemented **predictive algorithms** for tire mileage tracking using regression analysis and ML models, including Scikit-learn, to **forecast** wear patterns, improving prediction accuracy by **30%**.

Alumnus & Ambassador | *SHAD Canada* Jul 2023 – Jul 2024
Waterloo, ON, Canada

- Collaborated with professors and peers to solve complex coding and **engineering challenges**, strengthening analytical skills in competitive team environments.
- Experimented with **neural networks**, using OpenCV to develop a **gesture language tracker** called GestoTrace aimed at improving the translation of sign language.
- Applied logistic regression and decision tree models for **binary classification** challenges given by professors, such as detecting spam emails and analyzing emotions on social media posts.

Projects

PathVisor | *Svelte, Next.js, Vite, TypeScript, JavaScript, HTML, CSS, Git, Vercel* PathVisor

- Developed a pathfinding visualizer that allows users to explore **graph traversal** algorithms on an interactive grid.
- Designed A* using the **Manhattan distance heuristic**, and Dijkstra's algorithm leveraging a **min-priority queue**, both used to find the shortest path with the smallest cumulative weight cost.
- Implemented BFS to explore all paths layer by layer, and DFS to showcase exhaustive path exploration, emphasizing the differences in **time complexities** for each algorithm.

iCalendify | *JavaScript, HTML, CSS, Git, Vercel* iCalendify

- Engineered a **minimalist calendar** app. With a clean and **intuitive** design, one can quickly note down the most important tasks each day, saving all events locally.
- Implemented **state management** and **lifecycle methods** in JavaScript to handle dynamic event creation, ensuring that event data is efficiently tracked and updated.
- Utilized two-way **data binding** to synchronize input fields and calendar display, allowing **real-time updates** to events without manual refresh.

SchoolSphere | *Java, Apache NetBeans, Git* SchoolSphere

- Designed and implemented a robust **database system** for school management, handling student, employee, and inventory data using **Object-Oriented** programming to ensure efficient data management and scalability.
- Employed **file I/O** operations for efficient data storage and retrieval in **.txt** files, allowing users to view, edit, and export large data records with ease.