SPARSH SHAH

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Education

University of Waterloo   **Sep 2025 – Jun 2030**
Bachelor of Applied Science in Systems Design Engineering   *Waterloo, ON*
- Relevant Coursework: Data Structures and Algorithms, Digital Computation (C++)

Projects

Vaultify – Music Import & Streaming Platform | *React.js, Express.js, MongoDB, AWS S3*
- Built a full-stack music streaming platform enabling users to **import Spotify playlists** and stream **ad-free MP3s from AWS S3**, serving **20+ active users**
- Implemented automated YouTube audio extraction with direct AWS S3 uploads, **eliminating server storage bottlenecks** and reducing infrastructure costs
- Designed REST APIs with Express.js and MongoDB integration to prevent duplicate downloads, reducing playlist re-import times by **90%**
- Architected scalable cloud storage solution using AWS S3, enabling seamless audio streaming without server memory constraints

Real-Time Collaborative Task Manager | *React.js, Express.js, MongoDB, Socket.IO*
- Developed a **real-time collaborative task management application** with Socket.IO, supporting **20+ concurrent users** with live synchronization
- Implemented secure user authentication system with bcrypt encryption, enabling **secure access for 100+ registered accounts**
- Built responsive React.js frontend with real-time updates, enhancing user experience across desktop and mobile devices

ChatKey – Cross-Platform Messaging App | *React Native, Firebase Auth, Firestore, NativeWind*
- Built a lightweight **cross-platform messaging application** using React Native, supporting **iOS and Android** with seamless native performance
- Implemented **Firebase Authentication** and **Firestore database** for real-time messaging, enabling instant message synchronization across devices
- Designed unique **key-based room creation system**, allowing users to instantly create and join chat rooms using shareable room keys
- Architected scalable NoSQL data structure in Firestore, optimizing for real-time messaging performance and offline capability

Technical Skills

Languages: JavaScript, TypeScript, C++, Python, HTML/CSS
Frameworks/Tools: React.js, Node.js, Express.js, MongoDB, AWS, SQL, Postman, Git/GitHub

Experience

Web Development Assistant   **Sept 2023 – Jan 2024**
Fort McMurray Sanatan Mandir   *Fort McMurray, AB*
- Maintain and enhance community website using **HTML5, CSS3, and JavaScript**, improving user experience for **300+ community members**
- Collaborate with temple leadership and senior developers to implement feature updates aligned with community outreach goals

Robotics Programmer   **Sep 2022 – May 2025**
Westwood Robotics Team 221X   *Fort McMurray, AB*
- Programmed autonomous competition robot using C++, implementing **advanced PID-based control**, achieving precise arm positioning and movement stabilization
- Developed **odometry-based autonomous** navigation system, contributing to team's **provincial record** in autonomous competition points, in turn allowing us to be ranked first in Alberta
- Created **binary search PID tuning algorithm**, reducing manual tuning time by **50%** and improving development efficiency across the organization