

# SPARSH SHAH

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## Technical Skills

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**Languages:** JavaScript, TypeScript, C++, Python, HTML/CSS

**Frameworks/Tools:** React.js, Node.js, Express.js, MongoDB, AWS, Postman, Git/GitHub, React Native, Socket.IO

## Experience

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### Full Stack Developer — Scouting Intelligence Platform

Oct 2025 – Present

*UWAT VEXU Robotics Design Team*

*Waterloo, ON*

- Developing a full-stack scouting system using **FastAPI**, **React**, **OpenCV**, and **Docker** that analyzes livestream footage to track advanced metrics including score rate, jam frequency, defense effectiveness, and driver efficiency.
- Creating responsive visual dashboards and scalable **REST API** pipelines that support opponent profiling and historical comparison across multiple competitions.

### Software Developer

Sep 2023 – Jan 2024

*Fort McMurray Sanatan Mandir*

*Fort McMurray, AB*

- Revamped and maintained the community website using HTML, CSS, and JavaScript, serving **300+ active members**
- Implemented a mobile-first responsive design, improving accessibility for **70% of visitors** browsing on phones
- Built and integrated a secure contact form with real-time validation and error handling, improving communication by **reducing spam submissions**, and providing a smoother user experience for community members on the website

### Robotics Software Lead

Sep 2022 – May 2025

*Westwood Robotics Team 221X — Ranked 1st in Alberta*

*Fort McMurray, AB*

- Programmed an autonomous competition robot using C++, setting a **provincial record** in autonomous competition points and helping the team win 1st place in Alberta
- Developed **odometry-based autonomous navigation system**, and implemented advanced PID control algorithms for precise arm positioning, motion stabilization, and consistent task execution
- Created **binary search PID tuning algorithm**, reducing tuning time by **50%** and improving development efficiency

## Projects

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### 🔗 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+ concurrent 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 to prevent duplicate downloads, and architected a scalable cloud storage solution using AWS S3, reducing playlist re-import times by **90%** and enabling seamless streaming

### 🔗 AI-Powered Study Habit Tracker | *React.js, Tailwind, FastAPI, Redis, MongoDB, MediaPipe, ElevenLabs*

- Built an AI-driven study habit tracker using **MediaPipe** for real-time face and hand detection to monitor focus, distractions, and face-touching behavior
- Integrated **ElevenLabs API** for voice feedback and **Gemini API** to generate AI-powered study insights, and implemented secure authentication with **JWT** and **MongoDB** to store user sessions and display past study stats
- Developed a responsive **React** frontend and optimized **FastAPI** backend with **Redis** caching for smooth real-time processing and low-latency feedback, improving data retrieval by **~90%**

### 🔗 ChatKey – Cross-Platform Messaging App | *React Native, Expo, Firebase Auth, Firestore, NativeWind*

- Built a lightweight **cross-platform messaging application** using React Native, supporting **iOS and Android**
- Implemented **Firebase Authentication** and **Firestore database** for real-time messaging, enabling instant message synchronization across devices
- Designed a **key-based room creation system** and architected a scalable NoSQL data structure in Firestore, enabling instant room creation, real-time messaging performance, and offline capability

## Education

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### University of Waterloo

Expected Jun 2030

*BASc, Systems Design Engineering*

*Waterloo, ON*

- Relevant Coursework: Data Structures and Algorithms, Digital Computation (C++), MATLAB, Solidworks