

Swapnil Lohani

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EDUCATION

SRM Institute of Science and Technology

B.Tech, Computer Science and Engineering

July 2019 – May 2023

9.19 CGPA

EXPERIENCE

Software Developer

Deloitte USI

January 2024 – Present

- Designed and developed **web applications** using **ReactJS, Redux, React Query, JavaScript**, ensuring responsive user interfaces, optimizing performance with efficient state management and data fetching strategies.
- Implemented secure, **role-based authentication** and **authorization flows** using **React Router**, managing **tokens, session persistence**, dynamic access control, and route protection, ensuring enhanced security.
- Streamlined API interactions using **React Query**, enabling efficient data fetching, caching, and synchronization; reduced redundant API calls by **40%**, boosting application performance and responsiveness for end users.
- Refactored and optimized the **Redux store**, eliminating unnecessary state re-renders, minimizing boilerplate code, and achieving a **25% reduction in load times**, improving scalability, and overall application performance.

Undergraduate Research Assistant

Defence Research Development Organization

March 2023 – July 2023

- Developed an **AI object detection system** using **YOLOv4** for real-time image processing, integrating a **Node.js** backend with a **React** frontend to enable seamless object recognition in live video and static images.
- Built a scalable **Node.js Express API** to handle **image uploads** and invoke a **Python-based detection model** with **OpenCV**, optimizing API routes and error handling for smooth integration and image processing.
- Developed a **React frontend** to interface with **YOLOv4 and OpenCV pipelines**, enabling live image input, real-time result rendering with minimal latency, enhancing responsiveness across user flows.
- Enhanced **API efficiency** by streamlining image workflows and implementing caching layers, lowering average processing times by **30%** and preserving **95%** model accuracy across varied data sets and environments.

PROJECTS

Code Sandbox | *React, JavaScript, Node.js, Express, Socket.io, Docker*

- Designed and developed a full-featured **interactive code sandbox** platform using **React, Node.js**, and **Express**, offering an intuitive browser-based coding and execution experience similar to local development tools.
- Built a **terminal interface** using **xterm.js**, to dynamically execute **shell commands**, monitor **processes**, and display **outputs** in the browser, providing a seamless **terminal experience** within the application.
- Implemented **real-time collaboration** using **Socket.io**, employing an **event-driven architecture** for real-time synchronization of **code changes, user actions**, enabling **low-latency** and **bidirectional communication**.
- Dockerized** code execution environments by creating isolated **containers** per user session, implementing secure **filesystem bindings**, dynamic **port mappings**, and automated **container lifecycle management**.

Video Call/Chat Application | *React, Node.js, Express, TypeScript, Socket.io, Peer.js*

- Developed a **full-stack video calling and chat application** using the **MERN stack, WebRTC, Peer.js** utilizing **Socket.io** as a **Selective Forwarding Unit (SFU)** for real-time bidirectional communication.
- Integrated **WebRTC** with **Peer.js** to establish direct **peer-to-peer browser connections**, eliminating the need for intermediary servers and **STUN servers** to retrieve IP addresses, ensuring optimal performance, scalability.
- Developed real-time **messaging, room creation**, and **group call capabilities** using **Socket.io**, allowing participants to dynamically join rooms, exchange messages, and manage sessions effectively.
- Enhanced the platform with features like **call controls (mute/unmute, screen sharing)**, **dynamic participant grids**, and **responsive meeting layouts**, improving overall usability across device types.

TECHNICAL SKILLS

Languages: JavaScript, Java

Web Development: React, Node.js, Express.js, TypeScript, MongoDB, MySQL, Docker, Websockets, WebRTC, Tailwind, HTML/CSS

Tools/Platforms: Git, Visual Studio, Chrome DevTool

Familiar: C++, Next.js, React Native, Spring Boot, RabbitMQ, Jenkins