Sudhan Bhattarai

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📍 Kathmandu, Nepal   🔗 Portfolio - Sudhan Bhattarai

○ GitHub   in LinkedIn

Profile

I am a highly motivated Software Developer with a strong passion for Backend Development, and Cloud Computing. My journey in technology is driven by curiousness and a deep fascination with how computers work. I have a growth mindset and love exploring the nuance aspects of Software and continuously learning, and pushing the boundaries of what I can build.

Over the years, I have developed applications that not only cater to personal needs but also address real-world challenges through innovative solutions in **Web Development, Predictive Modeling, and Data Science Applications**. I am proficient in solving complex problems, designing scalable systems, and optimizing performance to build efficient and impactful solutions. Apart from continuous exploration and adaptability I love embracing challenges as opportunities for growth.

Professional Experience

06/2025 – Present

Associate Software Engineer
LIS Nepal P. Ltd
- Implemented advanced NLP solutions to support an agentic AI platform.
- Utilized **LangChain** and **LangGraph** for building modular and dynamic agent workflows.
- Designed and integrated fuzzy string matching algorithms to improve data retrieval and intent recognition accuracy.
- Contributed to the development of a scalable, robust architecture for autonomous agents.
- Collaborated with cross-functional teams to optimize LLM-based interactions and memory management.

03/2025 – 06/2025
Lalitpur, Nepal

Software Engineer Intern.
LIS Nepal P. Ltd.
- Designed and implemented a Proof of Concept (PoC) system leveraging **Microfrontend architecture** using React.js and Angular, using webpack as a bundler and integrated with Microservices.
- Utilized **Webpack Module Federation** to enable seamless cross-framework integration and demonstrate scalable, modular application development.
- Built a **Role-Based Access Control (RBAC)** system using the Django web framework, featuring secure authentication, permission management, and user role hierarchies.
- Conducted in-depth research on Microfrontend architecture, exploring key concepts, integration strategies using **Webpack Module Federation**, and best practices for cross-framework interoperability and performance optimization.

Education

2021 – present
Dhulikhel, Nepal

BSc. Computer Science
Kathmandu University
- CGPA **3.94** (*Current Average*)

2018 – 2020
Dillibazar, Kathmandu, Nepal

Grade 12 | Science
Trinity International College
- GPA **3.78**

Technical Interests

- Backend Development
- Cloud Computing and DevOps
- Network Programming
- Artificial Intelligence and Machine Learning
- Data Science

Technical Skills

Language
Python | C/C++ | JavaScript (Browser, Node.js) | TypeScript

Tools and Libraries
Git | Azure | Pandas | NumPy | AWS(Basic) | RESTful APIs

Database Management
MySQL | PostgreSQL | MongoDB | Prisma ORM

Framework
Express.js | FastAPI | React.js | Svelte | Material-UI | Angular

Projects

MovieRidge
A movie hosting, recommendation, and broadcasting app connecting movie enthusiasts.
- Developed a **personalized recommendation engine** using **Cosine Similarity Index** and **TMDB dataset** to suggest movies based on user watchlists.
- Implemented **WebRTC-based peer-to-peer broadcasting** using an **SFU architecture**, enabling seamless movie streaming and discussions.
- Integrated **TMDB API** to provide real-time movie metadata, including cast, ratings, and reviews.
- Designed an **interactive user interface** for creating, sharing, and customizing movie lists and helping connect and share views on movies with fellow movie enthusiasts.
- **Developed a scalable backend** with **Node.js, Express.js, PostgreSQL, and Prisma ORM**, ensuring efficient data handling and API performance.

Node.JS, **Express.js**, **FastAPI**, **PostreSQL**, **Prisma**, **React.js**, **Ant Design**, **Azure**, **WebSocket**, **Pandas**, **NumPy**

Weave
A collaborative web based environment for managing your projects and streamlining workflow between users and organizations.

- Designed and implemented a **role-based access control system** to distinguish permissions for supervisors and group members.
- Integrated **real-time notifications** for task updates and deadline reminders.
- Developed an **project tracking system** to monitor project progress.

Role: Backend Developer & Frontend API Integration
- Built and optimized **REST APIs** for seamless frontend-backend communication.
- Contributed to the frontend and handled **API integrations** using **React, Material-UI, and Ant Design.**

Node.JS, **Express.js**, **PostrgreSQL**, **Prisma**, **RestAPI** , **React**, **Material-UI**, **Ant Design**

Voiceops
Packet Level TCP/UDP for Voice/Audio Chat platform using C++
- Engineered a **low-latency communication protocol** using **TCP for text transmission** and **UDP for voice transmission**.
- Integrated **Opus codec** for real-time voice compression and **RNNoise** for noise suppression, ensuring high audio clarity.
- Developed a **GTK-based desktop interface** for user interactions and chat functionalities.

C++, **Opus**, **RNNoise**, **GTK**, **TCP**, **UDP**

Pluscare
A remote patient monitoring system assisting medical professionals in post-operative patient care.
- Designed a **ticketing system** for emergency cases, allowing doctors to review and respond in real-time.

- Implemented a **dashboard for patient health tracking**, enabling remote monitoring of vital signs.
- Integrated **Khalti API** for seamless and secure payment processing.

Node.JS, **Express.js**, **MongoDB**, **Svelte**

AQI Prediction
A machine learning model to predict air quality index (AQI) in Kathmandu based on meteorological data.
- Collected and preprocessed AQI datasets to train predictive models.
- Conducted a **comparative study** of four data mining classification algorithms to determine the best-performing model.
- Implemented **logarithmic weighted error calculations** to assign higher penalties to extreme misclassifications.

Orange, **Pandas**, **NumPy**, **Scikit-Learn**

Research

Enhancing Mobile Learning Platforms through Meaningful Gamification: Heatmaps, Quizzes, and Time-Based Rewards
- Design based Research on the Human Computer Interaction field for alternative gamification approaches.
- Under Review for **International Journal of Interactive Mobile Technologies**

Certificates

Pandas ⧉
Kaggle Course

SQL - HackerRank ⧉
A SQL Certificate from hackerrank.

Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning ⧉
A non-credit course authorized by Deeplearning.AI ⧉ and provided by Coursera

Awards

Runner Up in LOCUS-Hack a Week
Ed-Tech Category
- **Selected as a finalist among 20 projects** after a rigorous screening process.
- Developed a **web-based project management solution** for universities, enhancing collaboration and organization.
- Demonstrated the platform's usability and impact through a live prototype and presentation.