

# Sudhan Bhattarai

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📍 Kathmandu, Nepal

🔗 Portfolio - Sudhan Bhattarai

🐙 GitHub

🌐 LinkedIn

## Profile

I am a highly motivated Software Developer with a strong passion for Backend Development, Data Engineering, and Cloud Computing. My journey in technology is driven by an 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.

## Education

2021 – present Dhulikhel, Nepal	<b>BSc. Computer Science</b> <i>Kathmandu University</i> <ul style="list-style-type: none"><li>CGPA <u>3.94</u> (Current Average)</li></ul>
2018 – 2020 Dillibazar, Kathmandu, Nepal	<b>Grade 12   Science</b> <i>Trinity International College</i> <ul style="list-style-type: none"><li>GPA <u>3.78</u></li></ul>

## Technical Interests

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

## Technical Skills

<b>Language</b> Python   C/C++   JavaScript (Browser, Node.js)	<b>Database Management</b> MySQL   PostgreSQL   MongoDB   Prisma ORM
<b>Tools and Libraries</b> Git   Azure   Pandas   NumPy   Scikit-learn   AWS	<b>Framework</b> Express.js   FastAPI   React.js   Svelte   Material-UI

## 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.

NodeJS, Express.js, FastAPI, PostgreSQL, 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**.

NodeJS, Express.js, PostgreSQL, 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.

NodeJS, 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

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### Exploring Gamification Beyond BLAP: Heatmaps, Quizzes, and Time-Based Rewards in Education (Ongoing)

- Ongoing design based Research on the Human Computer Interaction field for alternative gamification approaches.

## Certificates


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**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

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### 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.