

PAWAN SHRESTHA

Computer Engineering Graduate

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Summary

Recent Computer Engineering graduate with a strong foundation in full-stack web development, machine learning, and AI systems. Experienced in building production-style applications end to end, from React/Node.js web apps to deep learning pipelines and LLM-powered agents with retrieval-augmented generation (RAG). Comfortable working across the stack, with hands-on experience in Python, JavaScript/TypeScript, SQL, and modern AI tooling. A fast learner who enjoys taking projects from prototype to something complete, tested, and well-documented.

Skills

Programming Languages: Python, JavaScript, TypeScript, SQL, HTML, CSS

Web Technologies: React, Node.js, Express.js, REST APIs

Databases: PostgreSQL, MongoDB, relational database concepts

AI & Machine Learning: Machine learning, deep learning (TensorFlow), LLM integration (LangChain, Gemini API), RAG pipelines, vector databases (Chroma), agentic tool-calling, prompt engineering

Data & Analytics: Data preprocessing and cleaning (Pandas, NumPy), exploratory data analysis, data visualization (Dash)

Developer Tools: Git, GitHub, Postman, Streamlit, pytest

Experience

Software Engineering Virtual Intern

Jul 2026

Quantium (via Forage)

Remote

- Configured a local development environment and executed data processing tasks to prepare datasets for analysis.
- Created and iteratively improved a dynamic Dash application to visualize data and extract actionable insights.
- Implemented and automated a comprehensive test suite using Python and pytest to ensure application reliability and validate functionality.

Frontend Developer Intern

May 2025 – Oct 2025

Aramex

Kathmandu, Nepal

- Debugged and resolved React component rendering issues and UI inconsistencies under the guidance of senior developers.
- Identified and resolved frontend bugs, such as button functionality issues, to improve application stability and usability.
- Added and updated delivery service locations in the customer portal to reflect the company's expanding service areas.
- Assisted in developing and maintaining frontend features for shipment management and customer-facing web applications.

Projects

Urban Sprawl Prediction Using U-Net and ConvLSTM | *Python, TensorFlow, Scikit-learn, Pandas, Numpy*

- **Designed and implemented a deep learning pipeline** using U-Net for land cover segmentation and ConvLSTM for predicting future urban expansion from satellite imagery.
- Preprocessed 7 years of satellite datasets (2018–2024) of Pokhara, Kathmandu, and Hyderabad using Pandas, NumPy, and Google Earth Engine to prepare multi-class semantic segmentation data for model training.
- Achieved **85% segmentation accuracy** and **78% precision** in forecasting urban sprawl for future land-use prediction.
- Generated predictive visualizations to analyze urban growth patterns and support long-term urban planning.

AI Agent with RAG & Tool-Calling | *Python, LangChain, Gemini API, Chroma/FAISS, Streamlit*

- **Built and iteratively upgraded an LLM-powered agent system**, evolving it from a basic console API call into a modular application with retrieval-augmented generation, tool-calling, and conversation memory.
- Implemented a full RAG pipeline: document ingestion, chunking, embedding, and retrieval using a local vector database, enabling grounded, context-aware responses.
- Added tool-calling logic (including live web search) with structured routing between direct answers and tool use.
- Built a Streamlit web interface for accessible demoing, alongside the original console interface.

NearBeat | *React, TypeScript, Node.js, Express.js, PostgreSQL*

- **Built a full-stack event discovery platform** enabling users to create, discover, and join local events based on their location.
- Implemented user authentication, event management, location-based discovery, and notification functionality using REST APIs.
- Developed real-time chat functionality to facilitate communication between event participants.
- Designed and managed a PostgreSQL database for efficient storage and retrieval of users, events, and messaging data.

CleanCity | *React, Node.js, Express.js*

- **Developed a web application** for reporting public infrastructure issues using image uploads and geolocation.
- Integrated AI-based image classification to identify reported issues such as garbage, potholes, and drainage problems.
- Built an administrative dashboard for tracking, managing, and resolving citizen complaints efficiently.
- Implemented location-based reporting to improve issue monitoring and response by city authorities.

Education

Bachelor of Computer Engineering

Dec 2021 – Mar 2026

Nepal Engineering College, Bhaktapur

CGPA: 3.23 / 4.00

- **Relevant Coursework:** Data Structures & Algorithms, Database Management Systems (DBMS), Operating Systems, Computer Networks, Artificial Intelligence, Computer Programming

Certifications

- **ML Summer School 2026 – Cohere Labs (Open Science Community):** Participated in an applied machine learning summer school program, engaging with current ML research and collaborative learning.
- **Agentic AI Foundations Associate – Oracle (2026):** Certified foundational knowledge of agentic AI systems and automation.
- **Understanding LLMs and Retrieval-Augmented Generation (RAG) – PDSC (2025):** Gained foundational knowledge of Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), prompt engineering, and real-world AI applications.
- **Career Essentials in Generative AI – Microsoft and LinkedIn (2026):** Explored core concepts of artificial intelligence, ethical considerations, prompt engineering techniques, and practical strategies for utilizing generative AI tools to enhance productivity.
- **Introduction to Python – DataCamp (2025):** Learned Python fundamentals including data analysis and core programming concepts.