Santosh Sapkota

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GitHub

ABOUT ME

Certified Computer Engineer passionate about Data Science and Machine Learning. Apart from tech, I enjoy strategic chess, riddles, and creative hobbies like photography and video editing.

EDUCATION

Cosmos College of Management & Technology   *Sep 2018 – Aug 2023*
Bachelor of Computer Engineering – Satdobato, Lalitpur

NIC Secondary School, HSEB (Now NEB)   *Jul 2016 – Jun 2018*
+2 Science – Dillibazaar, Kathmandu

PROJECTS

Machine Learning (Deep Learning) & MLOps Systems

○ **ICU Patient Deterioration Early-Warning System (MLOps) [Code][Demo]**
  – Architected a production-grade ML system to forecast ICU patient deterioration 6 hours in advance using multivariate time-series data, achieved 90%+ recall.
  – Operationalized the training lifecycle with experiment tracking, dataset versioning, and workflow orchestration (MLflow, DVC, Airflow).
  – Deployed a containerized FastAPI inference service with CI/CD automation and production monitoring using Prometheus, Grafana, and EvidentlyAI (offline drift analysis).

○ **IDC Breast Cancer Detection with Interpretability (CNN) [Code][Demo]**
  – Developed an interpretable deep learning pipeline for histopathology image classification using a custom CNN and Grad-CAM.
  – Productionized the model via a FastAPI backend and Streamlit frontend, deployed through Docker and GitHub Actions on Render.

○ **Diabetic Retinopathy Lesion Detection (YOLOv8) [link]**
  – Implemented an object detection pipeline using YOLOv8 to localize clinically relevant retinal lesions from annotated fundus images.

Data Science & Applied Machine Learning

○ **Breast Cancer Prediction (Tabular ML) [link]**
  – Conducted exploratory analysis and feature preprocessing on UCI diagnostic data.
  – Trained and evaluated neural network classifiers with emphasis on generalization and performance assessment.

○ **Medical Appointment No-Show Prediction [link]**
  – Analyzed patient and appointment-level data to identify behavioral patterns linked to missed visits.
  – Built classification models following systematic preprocessing and feature engineering workflows.

○ **Laptop Price Prediction [link]**
  – Modeled laptop pricing trends through regression techniques using hardware and manufacturer attributes.

EXPERIENCE

Machine Learning Internship(Remote)

Elevvo Tech, Cairo, Egypt   *Aug 2025 – Sep 2025*

- Developed and evaluated end-to-end machine learning pipelines across 4 projects, applying EDA, feature engineering, missing-value handling, class-imbalance techniques (SMOTE), and classical ML models to derive data-driven insights.
- Designed and trained a CNN-based image classification model using TensorFlow, gaining practical experience in deep learning workflows, model evaluation, and reproducible experimentation aligned with research and deployment-oriented practices.

Teaching Assistant

Shree Janapriya Secondary School, Baglung   *Aug 2023 – Nov 2023*

- Taught Science & Mathematics to secondary students.
- Designed lesson plans and simplified complex concepts for better understanding.

PUBLICATIONS

Sapkota, Santosh. (2025). *Breast Cancer Diagnosis Using Custom CNN and Grad-CAM: An Interpretable Deep Learning Approach on Histopathology Images.* Zenodo. https://doi.org/10.5281/zenodo.16900046

TECHNICAL SKILLS

Programming Languages: Python, HTML/CSS

Data Science & Analysis: Data Cleaning, Preprocessing, Exploratory Data Analysis (EDA), Feature Engineering, Data Visualization

Machine Learning & Deep Learning: Supervised Learning, Neural Networks, Deep Learning (CNN, RNN, ResNet, Transfer Learning), Object Detection (YOLO), Ensemble Methods (Random Forest, XGBoost, CatBoost, AdaBoost), Attention Mechanisms, Large Language Models (LLMs) and Fine-tuning

ML/DL Libraries & Frameworks: Pandas, NumPy, Scikit-learn, TensorFlow, Keras, OpenCV, Matplotlib, Seaborn

MLOps & Production Systems: MLflow, DVC, Airflow, FastAPI, CI/CD (GitHub Actions), Docker, Prometheus, Grafana, EvidentlyAI

Web Development & Deployment: Streamlit, GitHub Pages, Render, Railway, Cloudinary

Tools & Platforms: GitHub, Jupyter Notebook, Google Colab, Kaggle, Docker Desktop, LaTeX, Zotero

Mathematics for ML: Linear Algebra, Probability, Statistics, Calculus

OTHER SKILLS

- **Languages:** English (fluent), Nepali (native), Hindi (fluent)
- **Work Style:** Flexible, collaborative or independent
- **Curiosity:** Deep interest in science, behavior, and self-guided research
- **Technical Writing:** Writes blogs on Medium about ML projects and AI tools