Image Adhikari

Machine Learning Engineer
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Education	**Bachelor of Engineering** (BE) – *Computer Engineering*	May 2023

Kathmandu University, Dhulikhel, Kavre, Nepal
CGPA: 3.82/4.00

Higher Secondary (NEB) – *Science*   May 2018
Trinity International Secondary School and College, Dillibazaar, Kathmandu, Nepal
CGPA: 3.66/4.00

Professional Experience

Machine Learning Engineer – *Fusemachines Nepal*   August 2023 – Present
AI Services and AI Academics Team
Core Responsibilities:
- Design, review and refine reading materials, quizzes, projects and code implementation for topics in LLMs (Prompt Engineering, RLHF, Model compression and knowledge distillation, parallel and distributed training of LLMs), Generative AI (VAEs, GANs, Flow Models, Diffusion Models), vision language models (contrastive learning, masked language modelling, masked image modelling), and Foundational models.
- Build a LLM based script retrieval system (Retrieval Augmented Generation) for a client using Langchain, vector database and gpt-3.5; and another retrieval system based on elasticsearch.

Artificial Intelligence Intern – *Fusemachines Nepal*   April 2023 – July 2023
AI Services Team
Core Responsibilities:
- Built a personalized news recommender for Nepali language using sentence transformers to encode Nepali text and cosine similarity to generate similar recommendations
- Built a context aware food recommendation engine according to the day of the week and the hour of the day the user is logged in.

Cloud Intern – *Adex International, Nepal*   February 2023 – April 2023
Technology Department
Core Responsibilities:
- Get acquainted with different AWS services including EC2, S3, RDS, IAM, SageMaker, etc. and utilize them to deploy various webapps on the cloud.
- Use Terraform and Ansible to automate AWS services and manage their configuration and write blogs regarding the use of such services.

Research Experience

Machine Learning Research Intern   April 2023 – August 2023
Turbine Testing Lab, Department of Mechanical Engineering   *Kathmandu University*
Research Advisor: Dr. Sailesh Chitrakar
Research Areas:
- Conducted thorough research and analysis of the various phases of a Francis Turbine to develop a model for early detection of faults in the turbine.
- Extracted and visualized various trends in the data from different temperature and pressure sensors.
- Trained various ML models and compared different approaches including ensemble trees, LSTM, and CNN based approaches in predicting the phase of the turbine and/or detecting fault early in the turbine.

Other Qualifications

Microdegree™, Artificial Intelligence   January 2023 – Present
Fusemachines Nepal
- Machine Learning, Deep Learning, Computer Vision, and Natural Language Processing (3 months of each course with online lectures, coded and paper assignments, and four capstone projects)

Professional Associations

Nepal Engineering Council   December 2023 - Present

Registered Computer Engineer in the National Body governing the engineering profession

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Projects	**Lane Detection for Autonomous Vehicles** • Implemented SegNet architecture to the problem of lane detection and trained model with MSE of 0.0053 on validation dataset. • Also built a lane detection system using traditional approach using Canny edge detection and Hough transform. **Food Recommender** • Context based and sequential recommendation of food items to the user using DeepCTR for click through rate prediction and RecBole for sequential recommendation. • Trained on the Instacart Market Basket Analysis dataset. **Caption Generator** • Collected labeled Flickr30k dataset from Kaggle and trained a seq2seq model. • The model used CNN encoder and a unidirectional LSTM as the decoder. **BumbleBee** • A NextJS project for a social media platform built with sentiment analysis on comments and posts. • Took an average of the scores from Logistic Regression and Multinomial Naïve Bayes to determine hateful speech or profanity. **Scholarr** • A portal for teachers and students. The webapp is based upon the MERN stack and the mobile app is a Flutter implementation of the same. • Built a plagiarism detector by comparing student submissions using the n-gram language model and cosine similarity.
Trainings and Conferences	**4th Annual Nepal AI School** *10-day long (55 hrs lectures + 18 hrs lab sessions + 14 hrs project and professional development sessions) AI school organized by NepAI Applied Mathematics and Informatics Institute for research (NAAMI) with speakers and researchers from multiple reputed universities all around the world.*
Skills	• *Programming Language*: Python, C/C++ • *Libraries*: Scikit-Learn, Pandas, NumPy, Matplotlib, Plotly, Seaborn, OpenCV, BeautifulSoup, Streamlit • *Framework*: PyTorch, Django, Flask, FastAPI • *Database*: PostgreSQL, MySQL, MongoDB • *Version Control*: Git, GitHub • *Cloud Computing*: AWS (EC2, S3, RDS, Lambda), Terraform, Ansible • *General Skills*: Leadership, Team/Organizational Management, Project Management, Adaptability and Flexibility
Certification	• Stanford Machine Learning Specialization • Coursera Deep Learning Specialization by DeepLearning.AI • Machine Learning Engineering for Production (MLOps) Specialization
Organizations/ Leadership	**Co-Organizer** – TEDxKathmanduUniversity November 2021 – October 2023 Core Responsibilities: • Managed a team of 16 individuals to plan and execute a successful TEDx event while securing high-profile speakers, sponsors and partners from fields including medicine, technology, science, and art. • Oversaw event logistics, budget management, marketing strategies, talk curation, and participant engagement, resulting in over a dozen partners and sponsors, 100% ticket sales, and an outreach of 100000+ through social media. **President** – *AIESEC in Kathmandu University* February 2021 – February 2022 Core Responsibilities: • Led a team of over 40 volunteer members from across two cities in Nepal to facilitate leadership development in 300+ youths. • Facilitated 13 cross-cultural exchanges for volunteering and internship programs in AIESEC partner organizations in 4 different countries. • Conducted events and national conferences based on the SDGs generating a revenue of over NPR 300000.