Nishant Luitel

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Education

Bachelor's degree in Computer Engineering *Pulchowk Campus, Tribhuvan University*
Bachelor's degree program *November 2019 - 2024*
Average Percentage: 80.07%
Final Year project: *Implementation of Spelling Correction system for Nepali Language*

Work Experience

Transforming Global health with AI Lab (TOGAI) *August 2024 - Present*
Research Assistant—NepAl Applied Mathematics and Informatics Institute for research (NAAMII)

Supervisor: *Dr. Bishesh Khanal*

- Working on technical aspects for a multi-country(5) hackathon on **Federated Learning** in collaboration with *Infectious Disease Institute(IDI)*.
- Involved in **collecting and analyzing** blind-sweep ultrasound **video data** from numerous pregnant women.
- Working on **Automatic Quality estimation** of Blind Fetal Ultrasound Videos with AI.
- Working on **Anamoly detection** in pregnant womens with Blind Sweep Obstetric Ultrasound.
- Working on **representation learning** methods for Multiview Ultrasound Videos.
- Involved in building the **Project Based Learning (PBL)** Educational Platform in collaboration with *Tangible Careers*.

GritFeat Solutions *April 2024 - August 2024*
Machine Learning Engineer Fellow *Kathmandu, Nepal*

- Gained Experience in using NLP and CV tools, implementing RAG based chatbots.
- Final Project: Text guided image generation on small datasets (CIFAR-10, Flickr-32k) with Diffusion based architecture.

Transforming Global health with AI Lab (TOGAI) *November 2023 - Jan 2024*
Research Intern—NAAMII

- Completed 3 months internship.
- Researched on Low-resource Chatbots and the application of LLMs on Tabular data.

Papers/Publications

Contextual Spelling Correction with Language Model for Low-resource Setting [*Paper*]
Nishant Luitel, Nirajan Bekoju, Anand Kumar Sah, Subarna Shakya ***IEEE ICICT, 2024***
Proposed a Novel Method for Spelling Correction using unlabeled corpus of data only. We trained models to output probability scores for each component of the noisy channel framework and then combined them to perform Spelling correction

Can Perplexity Predict Finetuning Performance? An Investigation of Tokenization Methods on Sequential Language Models for Nepali [*Paper*]
Nishant Luitel, Nirajan Bekoju, Anand Kumar Sah, Subarna Shakya ***GEM2 Workshop, ACL 2025***
We trained small Language models using 6 different tokenization algorithms and explored the Correlation between Perplexity score with finetuning performance for downstream NLU tasks.

RobustFormer: Noise-Robust Pre-training for images and videos [*Paper*]
Ashish Bastola, Nishant Luitel, Hao Wang, Danda Pani Paudel, Roshani Poudel, Abolfazl Razi ***WACV 2026***
Used Noise filtering property of Discrete Wavelet Transform(DWT) to propose a Novel transformer architecture for robust pretraining in Images and Videos.

Improved Representation Learning for Robust AI Models from Blind Obstetric Ultrasound Sweep Videos [*Paper*]
Nishant Luitel, Kanchan Poudel, Prasiddha Bhandari, Bishesh Khanal *2025*
Used Multi-task learning to leverage the correlation between multiple clinical labels to find robust representation for multi-view ultrasound videos.

Technical skills

Programming Languages	Python, C, C++, Javascript
Machine Learning/Data Engineering Library	Scikit-Learn, Matplotlib, Pandas, Numpy, Jax
Deep Learning Frameworks	Pytorch, Tensowflow
Additional Tools	OpenCV, NLTK, SQL, Django, AWS console

Relevant/Personal Projects

Nepali Spelling Correction	Implemented a context based spelling correction system for Nepali using Nepali Language Model trained with Transformers.
Leduc Poker	Implemented AI bot for a simpler version of widely played Texas Holdem, known as Leduc Poker using Counterfactual Regret Minimization(CFR).
Image Generation	Text guided image generation on small datasets (CIFAR-10, Flickr-32k) with Diffusion based architecture.
Taxi Problem	Trained an agent to solve taxi problem in Reinforcement Learning using Every Visit, Off-policy Monte Carlo Method.
Football Analysis	Implemented Pass Network, Match Summary, Match Highlight(annimation), pitch control model using Tracking data.

Online Lectures/Extra Courses

- Deep Generative Models(CS236-online, Stanford University)
- Machine Learning with Graphs(CS224W-online, Stanford University)
- Deep Multitask Learning and Meta-Learning(CS 330-online, Stanford University)
- Natural Language Processing with Deep Learning (CS224N-online, Stanford University)
- Artificial Intelligence: Principles and Techniques(CS221-online, Stanford University)
- Statistical Machine Learning (Tubingen University)
- AWS Academy Cloud Architecting: Certified by Credly for successful completion of AWS Academy Graduate course.
- Data Structure and Algorithms with Python: Certified by Samsung Innovation Campus program for completion of a semester long course with mandatory exams.

Notable Participations

US Hackathon| **Organizing Team**	Organized an AI hackathon on obstetric ultrasound in low-resource settings (Nov 6–7, Uganda); delivered a two-hour lecture on data preprocessing to international participants.
ANAIS 2024–25| **Teaching Assistant**	Assisted in lab sessions led by renowned professors, including **Michael Bronstein**, at the 5th Annual Nepal AI School.
AI in Healthcare| **Workshop Tutor**	Delivered a session on mathematical and programming foundations for AI.
ICICT 2024| **Paper Presentation**	Presented a paper at the **7th IEEE International Conference on Inventive Computation Technologies**.
TechEnergy, LOCUS 2024| **Participant**	Developed models for energy forecasting using Random Forest, ARIMA, SARIMA, and Temporal Fusion Transformer (TFT); **secured 1st Position**.
DataVerse, LOCUS 2024| **Organizer**	Organized a Large Language Model–based information extraction competition.
DataVerse, LOCUS 2023| **Participant**	Built a machine learning model for subject classification on highly imbalanced datasets; **won in the Data Insights category**.