

Safal Thapaliya

Kathmandu, Nepal

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EDUCATION

Bachelor in Computer Engineering

November 2017 - April 2022

Pulchowk Campus, Institute of Engineering, Tribhuvan University

Lalitpur, Nepal

Undergraduate Thesis: Epidemiological Surveillance System using NLP [Thesis Link]

Academic Supervisor: Aman Shakya, Ph.D.

- Achieved Rank 24 in the university entrance examination out of nearly 18,000 candidates - *top* 0.3%, and received the scholarship provided by the Government of Nepal covering full tuition expenses.
- Graduated in *First Division* with 77.48%.
- **Relevant Courses:** Object Oriented Programming, Engineering Mathematics, Theory of Computation, Discrete Structure, Data Structure & Algorithm, Microprocessor, Applied Mathematics, Numerical Methods, Software Engineering, Computer Organization & Architecture, Computer Graphics, Probability & Statistics, Database Management System, Artificial Intelligence, Operating System, Computer Networks, Digital Signal Analysis & Processing, Image Processing & Pattern Recognition

English Proficiency Test(TOEFL iBT): 109, Reading: 30, Listening: 27, Speaking: 27, Writing: 25

RESEARCH EXPERIENCE

Nepal Applied Mathematics and Informatics Institute for research (NAAMII)

May 2022 - Present

Research Assistant

Lalitpur, Nepal

- Supervisor: [Bishesh Khanal, Ph.D.](#)
- Research Topics: multi-modal learning, vision-language models, self-supervised learning, medical image segmentation.

Nepal Applied Mathematics and Informatics Institute for research (NAAMII)

August 2021 - March 2022

Research Intern

Remote

- Worked on tweet classification for the Nepali language in a low-resource setting.

PUBLICATIONS

Conference Papers

- Poudel, K.*, Dhakal, M.*, Bhandari, P.*, Adhikari, R.*, **Thapaliya, S.***, & Khanal, B. (2024). **Exploring Transfer Learning in Medical Image Segmentation using VLMS.** In *Medical Imaging with Deep Learning*. [[Paper link](#)][MIDL'24 oral presentation]
- Dhakal, M., Adhikari R., **Thapaliya, S.**, & Khanal, B. (2024). **VLMS-Adapter: Finetuning Vision-Language Segmentation Efficiently with Lightweight Blocks.**[[Paper link](#)] [MICCAI'24 poster]
- Adhikari R., **Thapaliya, S.**, Dhakal, M., & Khanal, B. (2024). **TuneVLSeg: Prompt Tuning Benchmark for Vision-Language Segmentation Models.**[[Paper link](#)][ACCV'24 oral presentation]

Journal Papers

- Nakarmi, S., Pudasaini, S., **Thapaliya, S.**, Upretee, P., Shrestha, R., Giri, B., ... & Khanal, B. (2024). **Deep-learning assisted detection and quantification of (oo) cysts of Giardia and Cryptosporidium on smartphone microscopy images.** *Machine Learning for Biomedical Imaging*, 2(August 2024 issue), 956-976. [[Paper link](#)] [MELBA, August 2024 issue]

Workshop Papers

- Adhikari, R.*, Dhakal, M.*, **Thapaliya, S.***, Poudel, K., Bhandari, P., & Khanal, B. (2023). **Synthetic Boost: Leveraging Synthetic Data for Enhanced Vision-Language Segmentation in Echocardiography.** In *International Workshop on Advances in Simplifying Medical Ultrasound* (pp. 89-99). Cham: Springer Nature Switzerland. [[Paper link](#)] [ASMUS'23 Workshop]
- Adhikari, R., **Thapaliya, S.**, Basnet, N., Poudel, S., Shakya, A., & Khanal, B. (2022). **COVID-19-related Nepali Tweets Classification in a Low Resource Setting.** In *Proceedings of The Seventh Workshop on Social Media Mining for Health Applications, Workshop & Shared Task* (pp. 209-215). [[Paper link](#)] [SMM4H'22 Workshop]

Pre-prints/Under review/In Progress

- Dhakal, M., **Thapaliya, S.**, Adhikari R., & Khanal, B. (2024). **CLIPSeg-TFA: Training-Free Adapter for Few-Shot Vision-Language Segmentation.**[*In Progress*]

TEACHING EXPERIENCE

Children's Hospital For Eye Ent & Rehabilitation Services (CHEERS)

May 21, 2023 - Feb 21, 2024

AI Instructor

Lalitpur, Nepal

- Lectured and mentored a group of 10 interns in an AI-oriented course conducted by NAAMII.

Fourth Annual Nepal AI School 2023 by NAAMII

May 2023

Teaching Assistant

Lalitpur, Nepal

- Involved in designing the lab materials for the Foundations on Machine Learning lab session.

Third Winter School in AI 2021 by NAAMII.

December 2021

Teaching Assistant

Lalitpur, Nepal

- Involved in developing the lab materials for the Generative Adversarial Networks lab.

OTHER WORK EXPERIENCE

LogPoint Inc.

January 2022 - May 2022

Support and Solutions Intern

Lalitpur, Nepal

- Studied and participated in hands-on sessions on memory profiling, network traffic monitoring, distributed log handling, and monitoring and responding to threats in Logpoint's SIEM architecture.

Clamphook

November 2019 - June 2021

Backend Engineer

Lalitpur, Nepal

- Participated in designing and developing the server-side architecture for clamphook.com using *Flask* and *MongoDB*.

LICENSES AND CERTIFICATIONS

- [Deep Learning Specialization by DeepLearning.AI](#)
- [Machine Learning by Stanford Online](#)

PROJECTS

AI Assisted Smartphone Microphony | NAAMII, [Project Link] [Paper link]

2022-Present

- Working with [Kathmandu Institute of Applied Sciences \(KIAS\)](#) to develop object detection models to detect diarrhea cysts from vegetables, stool, and water samples using images captured from smartphone microscopes and brightfield microscopes.
- Trained and evaluated different object detection models (FasterRCNN, RetinaNet, YOLO, Deformable-DETR) to detect diarrhea parasites in microscopic images.
- Developed an online data collection and annotation platform to upload sample images from different locations in Nepal.

Lower Limb Angle Measurement for corrective osteotomy | NAAMII

2023

- Trained, evaluated, and deployed UNet and nnUNet for bone segmentation, landmark detection, and angle measurement in lower limb CT scans for corrective osteotomy.
- Set up a deployment environment using Flask and Docker to deploy the trained models.

Public Discourse Analysis System | IOE, Pulchowk Campus & NAAMII, [Project Link] [Paper link]

2022

- Developed COVID tweets analysis platform that allows health decision-makers to view a real-time analysis of narratives of tweets, particularly in Nepali and Devanagari scripts
- Researched and fine-tuned the MuRIL model for tweets in Nepalese language
- Assisted in the design and optimization of the backend and frontend of the web application

TECHNICAL SKILLS

- Proficient in Python, including different machine learning frameworks: Pytorch, Numpy, Scikit-learn, Pandas, and matplotlib
- Skilled in server-side programming using FastAPI, Flask, and Django, and designing functional databases using PostgreSQL, SQLite, and MongoDB
- Practiced in Linux server administration
- Well-versed in using Git and Docker

REFERENCES

- [Bishesh Khanal, Ph.D.](#), Director/Research Scientist, Nepal Applied Mathematics and Informatics Institute for research (NAAMII), Nepal, bishesh.khanal@naami.edu.np
- [Taman Upadhaya, Ph.D.](#) Project Scientist, Cedars-Sinai Medical Center, LA, California, taman.upadhaya@cshs.org
- [Aman Shakya, Ph.D.](#) Assistant Professor, Pulchowk Campus, Institute of Engineering, Tribhuvan University, Nepal, aman.shakya@ioe.edu.np