SAFAL THAPALIYA

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Education

2017–2022 : **Bachelor of Engineering, Computer Engineering**, *Institute of Engineering, Pulchowk Campus*, Pulchowk, Lalitpur, Nepal.
Academic Supervisor: Aman Shakya, Ph.D.
Undergraduate thesis: Epidemiological Surveillance System using NLP
- An awardee of the full scholarship scheme ranked 24 out of nearly 18,000 examinees in the entrance examination.
- Top of the class in the sixth semester.
- Graduated in first division with an aggregate of 77.48%.

2015-2017 : **High School**, *Kathmandu Model Higher Secondary School*, Kathmandu, Nepal.
Majors: Mathematics, Physics, Chemistry

Work Experience

May 2022–present **Research Assistant**, *Nepal Applied Mathematics and Informatics Institute for research (NAAMII)*, Lalitpur, Nepal.
Supervisor: Bishesh Khanal, Ph.D.
- Currently researching interpretability in vision language models and their potential applications for medical image segmentation.
- Involved in research on computer vision applications in medical imaging, including object detection and image segmentation.

May 2020–June 2021 **Backend Developer**, *Clamphook*, Nepal.
- Involved in developing an online examination platform aimed at students for IOE entrance preparation.
- Designed and implemented the system architecture of the online exam portal, and a user management system.

Publications

** indicates equal contribution.*

Conference Papers (Under review)

2024 Kanchan Poudel*, Manish Dhakal*, Prasiddha Bhandari*, Rabin Adhikari*, **Safal Thapaliya***, and Bishesh Khanal. **Exploring Transfer Learning in Medical Image Segmentation using VLMs**. In *Submitted to Medical Imaging with Deep Learning*, 2024. under review.

Accepted Workshop Papers

2023 Rabin Adhikari*, Manish Dhakal*, **Safal Thapaliya***, Kanchan Poudel, Prasiddha Bhandari, and Bishesh Khanal. **Synthetic Boost: Leveraging Synthetic Data for Enhanced Vision-Language Segmentation in Echocardiography**. In *International Workshop on Advances in Simplifying Medical Ultrasound*, pages 89–99. Springer, 2023.

2022 Rabin Adhikari, **Safal Thapaliya**, Nirajan Basnet, Samip Poudel, Aman Shakya, and Bishesh Khanal. **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*, pages 209–215, 2022.

Pre-prints

2023 Suprim Nakarmi, Sanam Pudasaini, **Safal Thapaliya**, Pratima Upretee, Retina Shrestha, Basant Giri, Bhanu Bhakta Neupane, and Bishesh Khanal. **Deep-learning assisted detection and quantification of (oo) cysts of Giardia and Cryptosporidium on smartphone microscopy images**. *arXiv preprint arXiv:2304.05339*, 2023.

Teaching Assistantship

May, 2023 : **Fourth Annual Nepal AI School 2023 by NAAMII**.
- Involved in designing the lab materials for the Foundations on Machine Learning lab session.

December, 2021 : **Third Winter School in AI 2021 by NAAMII**.
- Involved in developing the lab materials for the Generative Adversarial Networks lab.

Projects

Lower Limb Angle Measurement for corrective osteotomy, *NAAMII*, 2023.
- Segmentation of bones in lower limb CT scans for landmark detection and angle measurement for corrective osteotomy.
- Trained and deployed UNet and nnUNet for bone segmentation.
- Set up a deployment environment using Flask and Docker to deploy the trained segmentation and angle measurement models.

AI Assisted Smartphone Microscopy, *NAAMII*, 2022-Present.
- Working in collaboration 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 a smartphone microscope.
- Developed an online data collection and annotation platform to upload sample images from different locations in Nepal.
- Currently creating a large annotated dataset of images containing parasites.

Public Discourse Analysis System, *IOE, Pulchowk Campus & NAAMII*, 2021-2022.
- 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.
- This project was done as a part of my undergraduate thesis while interning at NAAMII.

Internships

Jan 2022–May 2022 **Support and Solutions Intern**, *Logpoint*, Nepal.
- Interned at Logpoint in the Customer Support and Solutions Department.
- Primary focus was on monitoring and maintaining a SIEM system and investigating and responding to threats.

Aug 2021–April 2022 **Research Intern**, *Nepal Applied Mathematics and Informatics Institute for research (NAAMII)*, Lalitpur, Nepal.
- Worked on my bachelor's thesis as part of the internship.
- Developed a dataset of covid-19-related tweet classification for the Nepali language in Devanagari script to analyze discourse on topics during the pandemic.
- Created a data collection and processing pipeline to extract tweets automatically.

Certifications

May 2020 **Deep Learning Specialization by DeepLearning.AI**.

May 2020 **Machine Learning by Stanford Online**.

Technical Skills

Programming Languages	Python, PyTorch, C, C++
Web Technologies	JavaScript, FastAPI, Django, Flask
Database	SQL, MySQL, MongoDB
Other Technologies	Linux System Administration, Version Control using Git, Docker

References

Bishesh Khanal, Ph.D., *Director/Research Scientist*, NepAI Applied Mathematics and Informatics Institute for research (NAAMII).
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Aman Shakya, Ph.D., *Assistant Professor*, Institute of Engineering, Pulchowk Campus.
Email: aman.shakya@ioe.edu.np

Taman Upadhaya, Ph.D., *Project Research Scientist*, Cedars-Sinai Medical Center.
Email: taman.upadhaya@cshs.org