

# SAFAL THAPALIYA

Kathmandu, Nepal  
☎ (+977) 9860808668  
✉ safalthapaliya@gmail.com  
🌐 <https://safalthapaliya.com.np/>  
📍 thapaliya19 in thapaliya19

## Work Experience

- May 2022–present **Research Assistant**, *NepAI Applied Mathematics and Informatics Institute for research (NAAMII)*, Lalitpur, Nepal.  
*Supervisor: Bishesh Khanal, Ph.D.*
- Involved in research on computer vision applications in medical imaging, including object detection and image segmentation.
  - Developed a data collection platform to upload microscopic images from different regions of Nepal.
  - Participated in MICCAI FLARE 2022 challenge and worked on image segmentation in CT images in a semi-supervised setting.
  - Currently exploring different vision language models and their potential applications for medical 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.

## 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 examiners 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

## Publications

\* indicates equal contribution.

### In Workshop Proceedings

- 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-print

- 2023 Kanchan Poudel\*, Manish Dhakal\*, Prasiddha Bhandari\*, Rabin Adhikari\*, **Safal Thapaliya\***, and Bishesh Khanal. **Exploring Transfer Learning in Medical Image Segmentation using Vision-Language Models**. *arXiv preprint arXiv:2308.07706*, 2023.
- 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.

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## Projects

### **AI Assisted Smartphone Microscopy, NAAMII.**

- 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.**

- 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.

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## 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, NepAI 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 automatically extract tweets.

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## 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

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## Teaching Assistantship

December, 2021 : **Third Winter School in AI 2021 by NAAMII.**

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

May, 2023 : **Fourth Annual Nepal AI School 2023 by NAAMII.**

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

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## References

**Bishesh Khanal, Ph.D.,** *Director/Research Scientist*, NepAI Applied Mathematics and Informatics Institute for research (NAAMII).

Email: bishesh.khanal@naamii.org.np

**Aman Shakya, Ph.D.,** *Assistant Professor*, Institute of Engineering, Pulchowk Campus.

Email: aman.shakya@ioe.edu.np

**Taman Upadhaya, Ph.D.,** *Associate Researcher*, University of California, San Francisco.

*Other Affiliations:* Adjunct Research Scientist, NepAI Applied Mathematics and Informatics Institute for research (NAAMII)

Email: taman.upadhaya@naamii.org.np