Rabin Adhikari

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Lalitpur, Nepal

WORK EXPERIENCE

NepAl Applied Mathematics and Informatics Institute for research (NAAMII)
Apr 2022 — Present

Research Assistant

Supervisor: Bishesh Khanal, Ph.D.

- Actively contributing to research projects focused on **Natural Language Processing (NLP)**, **Medical Imaging**, **Semi-supervised Learning**, and **Multi-modal Learning**.
- Employed rigorous research methodologies to analyze data, draw meaningful conclusions, and contribute to the advancement of knowledge in these domains.

LOCUS
Mar 2021 — May 2022

Software Coordinator

- Successfully managed software events, effectively overseeing all aspects of planning and execution while ensuring seamless coordination and timely resolution of various technical issues.
- Demonstrated strong organizational skills by successfully organizing approximately 10 software events, handling logistics, scheduling, and ensuring a smooth and engaging experience for participants.

Clamphook
Nov 2019 — Jun 2021

Full Stack Developer

- Actively participated in the development of clamphook.com by implementing the server-side functionality utilizing *MongoDB* as the database and *Flask* as the web framework.
- Leveraged *React* as the front-end technology to facilitate seamless communication between the front-end and back-end components of the website.
- Successfully deployed servers using *nginx*, *gunicorn*, and *Cloudflare*, effectively managing the infrastructure to handle concurrent traffic of up to 5,000 users. This involved ensuring smooth and uninterrupted user experience even during peak traffic periods.

IEEE Pulchowk Student Branch
Feb 2020 — Dec 2020

Event Chair

- Conducted a Tech Talk titled *A Platform for Innovations and Ideas* with the participation of CEOs from Yatri Motorcycles and International Green Developers Nepal as speakers, drawing an audience of approximately 500 participants.
- Organized a successful blood donation program in collaboration with the Nepal Red Cross Society,

demonstrating effective coordination and execution skills.

ASMI
May 2019 — Mar 2020

Junior Researcher

Conducted comprehensive research on two-dimensional *In-Video Advertising*, focusing on enabling seamless advertisement integration within platform videos without disrupting the viewing experience.

EDUCATION

Bachelor in Computer Engineering
Nov 2017 — Present

Pulchowk Campus, Institute of Engineering, Tribhuwan University, Nepal

Academic supervisor: Aman Shakya, Ph.D.
Thesis Title: Epidemiological Surveillance System using NLP

- Attained **Rank 1 in the Entrance Exam** of 2074 B.S. (2017 A.D.) out of nearly 18,000 candidates.
- Graduated with **First Division honors**, achieving an impressive **aggregate of 79.96%**.

High School
Jun 2015 — Jun 2017

SOS Hermann Gmeiner School Bharatpur, Bharatpur, Nepal

- Graduated in the **top 5 of the class**, demonstrating exceptional academic performance.
- Attained a distinction with an impressive **85.3% aggregate**, reflecting a strong commitment to excellence throughout high school.
- Consistently maintained high grades and showcased diligence in academic pursuits.

INTERNSHIPS

NepAl Applied Mathematics and Informatics Institute for research (NAAMII)
Aug 2021 — Apr 2022

Research Intern

Supervisor: Bishesh Khanal, Ph.D.

- Conducted research on *tweet classification* for my *bachelor's final year project thesis*.
- Developed a classification system to categorize tweets into *eight inclusive COVID-related categories*.
- Applied analytical techniques and data processing methods to achieve accurate classification results.

Diyo.ai
Jun 2020 — Dec 2020

NLP Research Intern

Supervisor: Binod Bhattarai, Ph.D.

- Conducted extensive research on the availability of Nepali language corpora, resulting in the creation of a substantial corpus measuring nearly 3 GB in size.
- Leveraged the *Huggingface* transformers library to train an *ALBERT* language model specifically tailored for the Nepali language.

PUBLICATIONS

- **Adhikari, Rabin**, 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*, pp. 209-215. 2022.
- Buddhacharya, Sangam Man, **Rabin Adhikari,** Nischal Maharjan, and Sanjeeb Prasad Panday. "Monocular Depth Estimation using a Multi-grid Attention-based Model." *Journal of Innovative Image Processing* 4, no. 3 (2022): 127-146.

LICENSES & CERTIFICATIONS

- **Generative Adversarial Networks (GANs) Specialization** by deeplearning.ai on Coursera
- **Natural Language Processing Specialization** by deeplearning.ai on Coursera
- **AI for Medicine Specialization** by deeplearning.ai on Coursera
- **DeepLearning.AI TensorFlow Developer Specialization** by deeplearning.ai on Coursera
- **TensorFlow: Data and Deployment Specialization** by deeplearning on Coursera
- **Applied Data Science with Python Specialization** by University of Michigan on Coursera
- **Mathematics for Machine Learning Specialization** by Imperial College London on Coursera
- **Machine Learning** by Stanford University on Coursera

PROJECTS

Vision Language Model for Interpretable Medical Image Segmentation

- Developed a novel approach utilizing multi-modal vision-language models to extract semantic information from image descriptions and images, enabling accurate segmentation of diverse medical images.
- Conducted extensive evaluations of existing vision language models on multiple datasets, assessing their applicability and transferability to the medical domain.
- Explored the impact of variations in image descriptions on model performance, revealing valuable insights into the model's responsiveness to different prompts.

Abusive Nepali Text Detection to Support IPV Research

- Implemented an advanced system for detecting abusive texts in extensive online content, particularly in social media platforms, to aid in IPV (Intimate Partner Violence) research.
- Created a comprehensive dataset and developed a MuRIL-based deep learning classification model specifically tailored for the Nepali language.
- Designed and built an interactive dashboard that enables gradual learning and visualizes various aspects of abusive texts in the Nepali language.

Standard Plane Navigation using Fetal Ultrasound Description

- Leveraged multi-modal vision-language models to establish a connection between textual descriptions and ultrasound (US) images for standard plane navigation.
- Curated a dataset featuring text descriptions for each US image, providing guidance to reach the

corresponding standard plane with minimal transformation.

- Aiming to aid novice radiologists to quickly navigate to the correct standard planes, while also reducing variance among expert radiologists.

TECHNICAL SKILLS

- Proficient in Python programming language, including machine learning and deep learning libraries such as *Numpy*, *Pandas*, *Scikit-Learn*, *TensorFlow*, and *PyTorch*.
- Skilled in client-side programming using *JavaScript* and *TypeScript*, along with frameworks like *React*.
- Experienced in server-side programming using *Node.js* frameworks like *Express*, as well as *Python* frameworks like *Django*, *Flask*, and *FastAPI*.
- Proficient in working with various *SQL* and *NoSQL* databases.
- Well-versed in *Linux* environment, possessing skills in tools like *Vim*, *Tmux*, and shell scripting, with experience across different Linux distributions.
- Knowledgeable in *version control systems*, specifically *Git*.
- Experienced in *Android* programming using *React Native*.
- Proficient in *Computer Graphics programming*, utilizing *OpenGL* in conjunction with libraries such as *SDL* and *SFML*.

AFFILIATIONS

- Member, IOE FOSS Community, 2017 to 2019
- Member, Mozilla Campus Club, Pulchowk Campus, 2017 to 2019
- LOCUS, Nepal, 2017 to 2022

REFERENCES

Bishesh Khanal, Ph.D.
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