Rabin Adhikari

E-mail: rabin.adk1@gmail.com
linkedin.com/in/rabinadk1
Website: rabinadhikari.com.np
github.com/rabinadk1

Work Experience

Max Planck Institute for Software Systems (MPI-SWS) *April 2024 - Present*
Student Research Assistant *Saarbrücken, Germany*
Supervisor: Prof. Adish Singla
Investigating methods to lower hallucinations in LLMs to enhance their reliability.

QuantPi *November 2024 - March 2024*
Data Scientist - Working Student *Saarbrücken, Germany*

- *Supervisor: Max Losch, Ph.D.*
- Evaluated Quality Assurance metrics for industry-grade multi-modal ML models.
- Assessed the robustness and biases of 4 production-ready models from NVIDIA.

Nepal Applied Mathematics and Informatics Institute for research (NAAMII) *April 2022 - September 2024*
Research Assistant *Lalitpur, Nepal*

- *Supervisor: Bishesh Khanal, Ph.D.*
- Contributed actively 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 advancing knowledge in these domains.

Clamphook *November 2019 - June 2021*
Full Stack Developer - Part Time *Lalitpur, Nepal*

- Participated vigorously 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.
- Deployed servers using *nginx*, *gunicorn*, and *Cloudflare*, effectively managing the infrastructure to handle concurrent traffic of up to 5,000 users. It ensured a smooth and uninterrupted user experience even during peak traffic.

ASMI *May 2019 - March 2020*
Junior Researcher - Part Time *Remote*
Researched comprehensively on two-dimensional *In-Video Advertising*, focusing on enabling seamless advertisement integration within platform videos without disrupting the viewing experience.

Education

MS in Data Science and AI *October 2024 - Present*
Saarland Informatics Campus, Saarland University *Saarbrücken, Germany*

- Grade: 1.0 (US Equivalent: 4.0)
- Courses Taken: *Elements of Machine Learning*, *Neural Networks: Theory and Implementation*, *Generative AI*, *Quantum AI*, *Machine Learning*, *Image Processing and Computer Vision*, and *High-level Computer Vision.*.

Bachelors in Computer Engineering *November 2017 - April 2022*
Pulchowk Campus, Institute of Engineering, Tribhuvan University *Lalitpur, Nepal*
Supervisor: Aman Shakya, Ph.D.
Capstone Project: Epidemiological Surveillance System using NLP
Attained *Rank 1 in the Entrance Exam* of 2017 A.D. (2074 B.S.) out of nearly 18,000 candidates.
Graduated with *First Division honors*, achieving an *aggregate of 79.96%*.

High School *June 2015 - June 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.
- Maintained high grades consistently and showcased diligence in academic pursuits.

Publications

Conference

Adhikari, R., Thapaliya, S., Dhakal, M., & Khanal, B. (2024). TuneVLSeg: Prompt Tuning Benchmark for Vision-Language Segmentation Models. In *Proceedings of the Asian Conference on Computer Vision (ACCV)* (pp. 126-144).

Dhakal, M., **Adhikari, R.**, Thapaliya, S., & Khanal, B. (2024). VLSM-Adapter: Finetuning Vision-Language Segmentation Efficiently with Lightweight Blocks. In *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)* (pp. 712-722).

Poudel, K.*, Dhakal, M.*, Bhandari, P.*, **Adhikari, R.***, Thapaliya, S.*, & Khanal, B. (2024). Exploring Transfer Learning in Medical Image Segmentation using Vision-Language Models. In *Medical Imaging with Deep Learning (MIDL)*.

Workshop

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 (ASMUS), co-located with MICCAI 2023* (pp. 89-99). Cham: Springer Nature Switzerland.

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 (SMM4H), co-located with COLING 2022* (pp. 209-215). Association for Computational Linguistics

Journal

Buddhacharya, S. M., **Adhikari, R.**, Maharjan, N., & Panday, S. P. (2022). Monocular Depth Estimation using a Multi-grid Attention-based Model. *Journal of Innovative Image Processing*, 4(3), 127-146.

Academic Experience

Advances in Simplifying Medical UltraSound (ASMUS) Workshop *March 3 - Oct 7, 2024*
Delivery Team Member *Remote*

- Communicated with Springer LNCS to register this year's issue, ensuring compliance with conference guidelines and deadlines.
- Registered a project in Springer Nature EquinOCS to serve as the submission platform for workshop papers, streamlining the paper submission process for participants.
- Taking a proactive role in website deployment and maintenance tasks, including making necessary amendments to enhance user experience and functionality.

Hospital for Children Eye ENT and Rehabilitation Service (CHEERS) *May 21, 2023 - Feb 21, 2024*
ML Instructor *Bhaktapur, Nepal*

- Contributed to the course's pedagogy on Python basics, supervised learning, classification problems, feature scaling, image transformations, and representation learning with neural networks.
- Guided students in implementing a *Multiclass Disease Classification Model for the Ocular Disease Classification Challenge* as their capstone project in PyTorch.

Fourth Annual Nepal AI School *May 22 - June 1, 2023*
Teaching Assistant *Kathmandu, Nepal*

- Assisted in lab sessions on *Probability and Statistics*, *Transformers*, and *Natural Language Processing (NLP)*, facilitating effective learning and practical applications for about 150 participants.
- Collaborated with *Danda Pani Paudel, Ph.D.*, *Nripesh Parajuli, Ph.D.*, and *Abhinav Joshi* for the refinement of lab materials and exercises, ensuring an optimal learning environment.
- Developed effective communication and teamwork skills through collaboration with esteemed experts and fellow teaching assistants.

Third Nepal Winter School in AI *December 20 - 30, 2021*
Teaching Assistant *Bhaktapur, Nepal*

- Assisted in the *ML fundamentals* lab and guided participants through a project on *Generative Adversarial Networks (GANs)*, for about 100 participants.
- Prepared engaging lab sessions and projects with *Danda Pani Paudel, Ph.D.*, *Nripesh Parajuli, Ph.D.*, and *Sandesh Ghimire, Ph.D.*, showcasing effective mentorship and guidance skills.

Major Licenses and Certifications

DeepLearning.AI	Generative Adversarial Networks (GANs) Specialization
DeepLearning.AI	Natural Language Processing Specialization
DeepLearning.AI	AI for Medicine Specialization
DeepLearning.AI	Deep Learning Specialization
University of Michigan	Applied Data Science with Python Specialization
DeepLearning.AI	TensorFlow Developer Professional Certificate
DeepLearning.AI	TensorFlow: Data and Deployment Specialization
Imperial College London	Mathematics for Machine Learning Specialization
Stanford University	Machine Learning

Technical Skills

- Adept in *Python*, including machine learning and deep learning libraries such as *Numpy*, *Pandas*, *Scikit-Learn*, *TensorFlow*, and *PyTorch*.
- 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.
- Skilled in client-side programming using *JavaScript* and *TypeScript*, along with frameworks like *React*.
- 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*.

Internships

Nepal Applied Mathematics and Informatics Institute for research (NAAMII) *August 2021 - April 2022*
Research Intern *Supervisor: Bishesh Khanal, Ph.D.*

- Researched multi-label tweet classification for my *Bachelor's final year capstone project.*
- Developed a classification system to *categorize tweets into* 8 *inclusive COVID-related categories.*
- Applied analytical techniques and data processing methods for accurate classification results.

Diyo.AI *June - December 2020*
NLP Research Intern *Supervisor: Binod Bhattarai, Ph.D.*

- Conducted extensive research on the availability of *Nepali language corpora*, resulting in 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.

Affiliations

LOCUS *March 2021 - May 2022*
Software Coordinator *Lalitpur, Nepal*

- 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 participant experience.

IEEE Pulchowk Student Branch *February - December 2020*
Event Chair *Lalitpur, Nepal*

- Conducted a Tech Talk titled *A Platform for Innovations and Ideas* with CEOs from Yatri Motorcycles and International Green Developers Nepal as speakers, drawing an audience of approximately 200 participants.
- Organized a successful blood donation program in collaboration with the Nepal Red Cross Society, demonstrating effective coordination and execution skills.

References

1. **Bishesh Khanal, Ph.D.**

   Director/Research Scientist, *Nepal Applied Mathematics and Informatics Institute for research (NAAMII)*
   Email: `bishesh.khanal@naamii.org.np`

2. **Aman Shakya, Ph.D.**

   Assistant Professor, *Pulchowk Campus, Institute of Engineering, Tribhuvan University, Nepal*
   Email: `aman.shakya@ioe.edu.np`