Ashim Dahal.

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Employment History

2023 – Pres **Research Assistant,** University of Southern Mississippi, MS, USA.
• Spearheaded multiple projects on Computer Vision on Stable Diffusion, Vision Transformer, Visual Question Answering, Convolitional Kolmorogov Networks and Gaussian Splatting.
• Optimized ML models on 6-gpu multinode HPC cluster, reducing training time by 65%

2022 – 2023 **Machine Learning Researcher,** Data Research Council for Students, Kathmandu, Nepal.
• Designed and delivered ML bootcamps to 200+ students with 92% positive feedback rate
• Developed 6 Computer Vision tools and endpoints used in 4 hackathons resulting in best local project (Number 1) position in NASA Space Apps 2022

2022 - 2022 **Research and Development Intern,** Robotics Association of Nepal, Lalitpur, Nepal.
• Developed 2D vision system achieving 94% object detection accuracy in robotic applications
• Created the robotics curriculum adopted by 4 high schools, reaching 900+ students

Education

2023 – 2027 **B.Sc. in Computer and Information Science, University of Southern Mississippi**
CGPA: 3.92; Academic Excellence Full Tuition and Housing Scholarship

Selected Publications

Journal Articles

1. **A. Dahal**, S. Akbar Murad, and N. Rahimi, "Heuristical comparison of vision transformers against convolutional neural networks for semantic segmentation on remote sensing imagery," *IEEE Sensors Journal*, vol. 25, no. 10, pp. 17 364–17 373, 2025. **URL** (**Impact Factor: 4.3**).

Peer-Reviewed Conference Publications

1. **A. Dahal**, S. A. Murad, and N. Rahimi, "Embedding shift dissection on clip: Effects of augmentations on vlm's representation learning," in *Proceedings of the **Computer Vision and Pattern Recognition Conference (CVPR)** Workshops*, Jun. 2025, pp. 4814–4818. **URL**.
2. **A. Dahal**, P. Bajgai, and N. Rahimi, "Analysis of zero day attack detection using mlp and xai," in *Security and Management and Wireless Networks*, Springer Nature Switzerland, 2025, pp. 57–67, ISBN: 978-3-031-86637-1. **URL**.
3. **A. Dahal**, "Would you own a robot?" In *Proceedings of the Ninth National Conference on Science and Technology by NAST*, Lalitpur, Nepal, 2022. **URL**.

Submitted Manuscripts

1. **A. Dahal**, A. Ghimire, S. A. Murad, and N. Rahimi, *Redemption score: An evaluation framework to rank image captions while redeeming image semantics and language pragmatics*, 2025. arXiv: 2505.16180 [cs.CV]. **URL**.
2. **A. Dahal**, S. A. Murad, and N. Rahimi, *Efficiency bottlenecks of convolutional kolmogorov-arnold networks: A comprehensive scrutiny with imagenet, alexnet, lenet and tabular classification, arXiv e-prints*, 2025. **URL**.
3. S. A. Murad, **A. Dahal**, and N. Rahimi, *Eeg-to-text translation: A model for deciphering human brain activity*, 2025. arXiv: 2505.13936 [cs.CL]. **URL**.
4. S. A. Murad, **A. Dahal**, and N. Rahimi, *Multi-lingual cyber threat detection in tweets/x using ml, dl, and llm: A comparative analysis, arXiv e-prints*, 2025. **URL**.

Creative Projects

- **Thislexic** An Extended Reality (XR) app that helps dyslexic patients to practice writing using llama cpp
- **Torchy** A PyTorch wrapper that adds functional usage of .train(), validate and other utilities from tensorflow's pipeline to nn.Module (**15 ★ and 5 forks**)
- **Jelly** A chat-bot that replies to and from Romanized Nepali designed to help mental health patients; a first of its kind (**9 ★ stars and 7 forks**)
- **Frida** A climate change super app that summarizes climate change news, predicts landslides based on weather data, hosts events and gives flood alerts based on current location of rivers

Miscellaneous Experience

Invited Talks

- 2025 What is an Image?, USM, Hattiesburg, MS, USA. **URL**
- 2023 Using AI in journalism, Federation of Nepali Journalist, Kaski, Nepal. **URL**
- Future of AI, Fishtail Academy, Pokhara, Nepal. **URL**

Awards and Achievements

- 2025 **$5,500 Summer Research Grant**, Drapeau Center for Undergraduate Research
- 2024 **$500 checkpoint**, Awarded by school of business to develop XR application
- **$200 Eagles Write Award**, Best Visual Analysis School of Humanities, USM
- 2023-2024 **President's List X** 2, Awarded for Excellent Performance in Academics
- 2022 **Global Nominee**, NASA Space Apps Challenge **Project Site**

Community Offices

- 2025-Pres **Research Liaison**, School of CSCE Ambassadors, USM
- 2024-Pres **Head of Artificial Intelligence**, Google Developer Students Club at USM
- 2022-2023 **Founder and President**, Together We Learn

Teaching in Bootcamps

- 2023 7 Days Pokhara Machine Learning Bootcamp –
- 7 Days Bootcamp on Pragati School –
- DRCFS Chitwan Bootcamp –
- 14 Days Intermediate Python Bootcamp –
- 2022 30 Days Beginner Python Bootcamp –

Certifications

- 2020-2021 Generative Adversarial Networks Specialization, Deep Learning and Reinforcement Learning, Sequence Models, Machine Learning, Intro to Data Science, Neural Networks and Deep Learning

Skills

- **Languages** Python, C++, C#, SQL
- **ML** PyTorch, Open CV, Hugging Face, Accelerate, FastAPI, MatplotLib, Scikit-Learn, Pandas
- **CompVis** Vision Transformers, Vision Language Models, Multimodal Systems, Photogrammetry, Gaussian Splatting, Stable Diffusion, Neural Radiance Fields, Advanced Video Reasoning, Convolutional Kolmogorov Arnold Networks, Image Segmentation and Mono/Stereo Depth Maps
- **Tools** Git, Linux, NVIM, High Performance Computing Clusters (HPCC), LaTeX