

# Ashim Dahal.




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## Employment History


- 2023 - ...     **Research Assistant**, University of Southern Mississippi, MS, USA.
- Led 3 research projects in Computer Vision using Vision Transformers, Kolmogorov Arnold Representations and Stable Diffusion, achieving 84% mIoU, 90% accuracy and strong fidelity on novel datasets
  - Optimized ML models on 6-gpu multinode HPC cluster, reducing training time by 65%.
- 2022 - 2023     **Machine Learning Consultant**, 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 robotics curriculum adopted by 4 high schools, reaching 900+ students.

## Education


- 2023 - ...     **B.Sc. in Computer and Information Science, University of Southern Mississippi**  
Involvements : *Research, Google Developers Student Club, The Nations Student Association, Nepalese Student Association.*

## Research Publications




### Articles

- 1 **A. Dahal**, S. A. Murad, and N. Rahimi, "Heuristical Comparison of Vision Transformers Against Convolutional Neural Networks for Semantic Segmentation on Remote Sensing Imagery," *arXiv e-prints*, Nov. 2024.  [URL](#).









### Conference Proceedings

- 1 **A. Dahal**, P. Bajgai, and N. Rahimi, "Analysis of zero day attack detection using mlp and xai," in *Proceedings of International Conference on Security and Management (Springer Nature) in press*, Las Vegas, USA, 2024.
- 2 **A. Dahal**, "Would you own a robot?" In *Proceedings of the Ninth National Conference on Science and Technology by NAST*, Lalitpur, Nepal, 2022.  [URL](#).

### Preprint Articles



- 1 **A. Dahal** and S. Kattel, "Predicting handwritten devanagari characters using modified-lenet model architecture," Preprint: 400+ reads, oct 2022.  [URL](#).
- 2 **A. Dahal**, "Do you "go big or go home" with neural networks?" Preprint: 200+ reads, 2022.  [URL](#).
- 3 **A. Dahal**, A. Khadka, B. Kharal, and A. Shah, "Effectiveness of native language for conversational bots," Preprint: 500+ reads, 2022.  [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 (8 ★ 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






### Community Service

- 2024     **Head of Artificial Intelligence**, Google Developer Students Club at USM.
- 2022-2023     **Founder and President**, Together We Learn.





### Awards and Achievements

- 2024     **Computing Research Association Undergraduate Researcher Award**, Nominee from USM.
-  **Eagles Write Best Visual Analysis**, Placed 1 out of all students who took course ENG 101 (est: 710+), 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**

### Certification

- 2021     **Generative Adversarial Networks Specialization**. Awarded by Coursera.
-  **Deep Learning and Reinforcement Learning**. Awarded by Coursera.
-  **Sequence Models**. Awarded by Coursera.
- 2020     **Machine Learning**. Awarded by Coursera.
-  **Neural Networks and Deep Learning**. Awarded by Coursera.

## Skills


- Languages     Python, C++, C#, SQL.
- Databases     MySQL, PostgreSQL, SQLite.
- ML     PyTorch, open cv, Hugging Face, FastAPI, Matplotlib, Scikit-Learn, Pandas
- Tools     Git, Linux, NVIM, High Performance Clusters (HPC)

## References

### Dr. Nick Rahimi

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