PARIBESH REGMI

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EDUCATION

Computing and Information Science — *Rochester Institute of Technology*
PhD Degree — *08/2021 - Present*
Advisor: Prof. Rui Li
Relevant courses: *Statistical Machine Learning, Deep Learning, Deep Learning Security, Foundations of Algorithms, Software Engineering*

Electronics and Communication Engineering — *IOE, Tribhuvan University*
Bachelor's degree — *2014 - 2018*
Thesis: *Nepali Speech Recognition Using RNN-CTC Model*

WORK EXPERIENCE

Lab of Use-Inspired Computational Intelligence (LUCI) — *2021 - Present*
Graduate Research Assistant — *Rochester, New York*

Amazon.com Inc. — *Jun - Sep 2025*
Applied Science Intern — *Santa Cruz, California*

- *Developed visual token pruning algorithm for efficient inference in vision-language models (VLM).*

LogPoint — *2018 - 2021*
Solutions Engineer — *Lalitpur, Nepal*

- *Solved system/software issues at the customer's end.*
- *Troubleshooted/maintained system and software associated to cybersecurity, networking, Linux, user and entity behavior analysis (UEBA).*

RESEARCH

My general research spans the areas of Bayesian methods, and generative models (VAEs, diffusion models, and vision–language models) and graph learning. I have developed Bayesian model selection frameworks for VAEs and Graph Neural Networks, and visual token pruning algorithm for efficient inference in vision–language models. Currently, I focus on diffusion and flow-matching models, with an emphasis on improving generation efficiency through one- or few-step generation.

Interests:

- Machine Learning, Deep Learning, Bayesian Methods
- Generative Models - (VAE, Diffusion/Flow Models)
- Graph Neural Networks
- Vision-Language Models (VLMs)

PAPERS/PUBLICATIONS

Adaptive Two-Stage Visual Token Pruning for Efficient Inference in Video-Language Models
Under Review

Shortcut Diffusion Training with Cumulative Consistency Loss: An Optimal Control View
Paribesh Regmi; Sandesh Ghimire; Rui Li
International Conference on Learning Representations (ICLR), 2026

Bayesian Neighborhood Adaptation for Graph Neural Networks
Paribesh Regmi; Rui Li; Kishan KC
Transactions of Machine Learning Research (TMLR), 2025

AdaVAE: Bayesian Structural Adaptation for Variational Autoencoders
Paribesh Regmi; Rui Li
Thirty-Seventh Conference on Neural Information Processing Systems (NeurIPS), 2023

Predicting Biomedical Interactions with Probabilistic Model Selection for Graph Neural Networks
Kishan KC; Rui Li; Paribesh Regmi; Anne Haake
arxiv.org

Nepali Speech Recognition Using RNN-CTC Model
Paribesh Regmi; Arjun Dahal; Basanta Joshi
International Journal of Computer Applications, 2019

INVOLVED PROJECTS

Adaptive Token Pruning for Efficient Inference in Video-Language Models *Summer Internship 2025*

- *Developed an algorithm to efficiently process video inputs in vision-language models by reducing the number of visual tokens for LLM to process.*
- *The algorithm prunes out the redundant visual tokens in two stages: frame and token-level pruning. We also determine the number of tokens to prune based on the dynamism in the video content.*
- *This allows the deployment of VLMs in low-resource edge devices.*

ACADEMIC INVOLVEMENT

- **Poster Presentation** on *AdaVAE: Bayesian Structural Adaptation for Variational Autoencoders*, NeurIPS 2023 (video link)
- **Guest Lecture** on *A tutorial on Deep Generative Models : from VAE to Flow-Matching*, RIT 2025.
- **Poster Presentation**(upcoming) on *Shortcut Diffusion Training with Cumulative Consistency Loss: An Optimal Control View*, ICLR 2026.

Served as a reviewer: ICLR 2025, NeurIPS 2025, ICLR 2026, ICML 2026.

AWARDS

Fully funded Ph.D./ Research Assistantship at RIT *2021 - Present*
Full financial support for my Ph.D. from NSF grants

Fusemachine AI Fellowship Award *2017 - 2018*
Fellowship offered by Fusemachines (fusemachines.com) for AI and Machine Learning study

Full Scholarship for Bachelor's in Engineering *2014 - 2018*
Ranked 28^{th} among 13,000 applicants in the engineering entrance examination to gain a full scholarship

SKILLS

Programming	**General:** Python, moderate expertise in Java and C++; **ML and DL:** pytorch, scikit-learn, numpy; **Visualization:** matplotlib
Troubleshooting	Solving system(Linux) and software related issues. Three years of work experience in troubleshooting.
Leadership	Former event manager at Nepalese Student Association, Rochester Institute of Technology (NSA-RIT)