

# PARIBESH REGMI

Graduate Research Assistant — Rochester Institute of Technology

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## EDUCATION

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### Computing and Information Science

PhD Degree

Advisor: Prof. Rui Li

**Relevant courses:** Statistical Machine Learning, Deep Learning, Deep Learning Security, Foundations of Algorithms, Software Engineering

Rochester Institute of Technology

2021 - Present

### Electronics and Communication Engineering

Bachelor's degree

**Thesis:** Nepali Speech Recognition Using RNN-CTC Model

IOE, Tribhuvan University

2014 - 2018

## WORK EXPERIENCE

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### Lab of Use-Inspired Computational Intelligence (LUCI)

Graduate Research Assistant

2021 - Present

Rochester, New York

### LogPoint

Solutions Engineer

2018 - 2021

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 INTERESTS

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Statistical Machine Learning (ML), Deep Learning (DL), Bayesian Methods, Generative Models, Deep Graph Learning

## PUBLICATIONS

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### 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

## RESEARCH/PROJECTS

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### Bayesian model selection in unsupervised learning

2022 - 2023

- Developing a Bayesian model selection framework to infer an optimal model structure in variational autoencoders, guided by the data
- The framework eliminates the need to fine-tune network complexity for the encoding and decoding networks
- The framework is compatible with the state-of-the-art VAE regularization methods as well as various VAE variants, further improving their performance

### Relaxing structural constraints in federated learning

2023 - Present

- Developing a hierarchical Bayesian framework for the modeling server/client network structures in federated learning.

- *The framework relaxes the structural constraints in federated learning tasks, allowing clients to have their own independent and personalized network structure.*

**Representation learning on graphs** 2022 - Present

- *Enhancing graph representations by inferring appropriate neighborhood scope for message aggregation in a graph neural network.*
- *Using graph characteristics to infer the most plausible set of neighbors for message aggregation in a graph convolutional network.*
- *Application of Bayesian model selection to real world applications like graphs.*

**Leveraging deep learning in graphs for biomedical interaction prediction** 2021 - Present

- *Application of developed graph algorithms to real-world biomedical scenarios, like inferring the interactions in the datasets like PPI(Protein-Protein Interaction), DTI(Drug-Target Interaction), etc.*

**Nepali Speech Recognition** 2018 - 2019

- *Application of deep learning to enhance the Nepali speech recognition system, transitioning from a limited vocabulary size to a large corpus. Connectionist Temporal Classification (CTC) loss aided in enabling end-to-end training of the recurrent neural network model.*
- *Defined a Nepali language character set of 67 characters.*

**Optical Character Recognition for the MNIST dataset** 2017

- *Implementation of backpropagation algorithm in a vanilla neural network from scratch to classify the MNIST datasets*

**AWARDS**

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**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<sup>th</sup> among 13,000 applicants in the engineering entrance examination to gain a full scholarship*

**SKILLS**

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