

Ruby Shrestha

Contact Information

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Research Interests

Deep learning, Generative models, Counterfactual data augmentation, Fairness & distributional robustness of deep learning models

Education

PhD, Computing and Information Sciences **2022-Present**
Rochester Institute of Technology, Rochester, NY, USA **GPA (3.72/4.00)**
Advisor: Dr. Linwei Wang
Relevant Courses: Quantitative Foundations, Deep Learning, Statistical Machine Learning, Non-convex Optimization, Data Science & Analytics, Visual Analytics

B.Sc., Computer Science and Information Technology **2013-2017**
Tribhuvan University, Nepal **(84.14%)**

Honors & Awards

Dr. Russell and Melissa Bessette Award for Doctoral Student Excellence **2023**
Rochester Institute of Technology, Rochester, NY, USA

National Female Education Award **2019**
Native Name: Nepal Chhatra Bidhya Padak
Ministry of Education, Science and Technology, Government of Nepal

Academic Excellence Award **2018**
Deerwalk Institute of Technology, Tribhuvan University, Nepal

Winner: International Girls in ICT Day Hackathon **2016**
Nepal Telecommunications Authority and Women Leaders in Technology

Outstanding Cambridge Learners Award- Top in Country **2013**
Cambridge Assessment International Education, United Kingdom

Technical Skills

Deep Learning Framework: PyTorch
Programming: Python
Data Management and Analytics: MySQL, Elasticsearch
Visualization: Tableau, Looker Studio
Platforms: Windows, Linux, Mac OS

Research Experience

Graduate Research Assistant **2022-Present**
Computational Biomedicine Lab (CBL)
Rochester Institute of Technology, NY, USA
Research Area: Fairness and distributional robustness of deep learning models.
Currently researching on making generative models robust towards (spurious) feature correlations in data.

Independent Research Study as Alumna **05/2018-08/2018**
Deerwalk Institute of Technology, Tribhuvan University, Nepal
Research Focus: Empirically assess mixed-model approach of path finding (irregularities-tolerant dead-end filling with A* search) to understand its feasibility and effectiveness on convoluted maze paths.

Research Assistant **03/2017-05/2017**
Deerwalk Institute of Technology, Tribhuvan University, Nepal
Research Focus: Understand the perspective of students on the usage of blended learning pedagogy in Deerwalk Institute of Technology.

Publications

DATS: Difficulty-Aware Task Sampler for Meta-Learning Physics-Informed Neural Networks
M. Toloubidokhti, Y. Ye, R. Missel, X. Jiang, N. Kumar, **R. Shrestha**, L. Wang
The Twelfth International Conference on Learning Representations, 2024
Conference Article

Distributionally Robust Optimization and Invariant Representation Learning for Addressing Subgroup Underrepresentation: Mechanisms and Limitations
N. Kumar, **R. Shrestha**, Z. Li, L. Wang
Fairness of AI in Medical Imaging (FAIMI @ MICCAI), 2023
Workshop Article

Maze Solving with Anomaly Tolerant Dead End Filling and A*: Implementation and Analysis
R. Shrestha
Deerwalk Journal of Computer Science and Information Technology, 2019
Journal Article

Manuscripts Under Review

Anonymous manuscript, ICLR 2026 (double-blind)
Overview: Robust generative modeling under training dataset correlation

Re-Examining the Impact of Observed Feature Correlations on Minority Image Generation
R. Shrestha, N. Kumar, A. Gopi, B. Lekhak, L. Wang
IEEE Transactions on Pattern Analysis and Machine Intelligence, 2025

Conference Presentations

Maze Solving with Anomaly Tolerant Dead End Filling and A*: Implementation and Analysis
Fifth International Conference on Information Technology for Development, 2018

Blended Learning in DWIT College: From Learners Perspective
Fourth International Conference on Information Technology for Development, 2017

Teaching Experience

Workshop Instructor **01/2019-03/2019**
Deerwalk Institute of Technology, Tribhuvan University, Nepal
Course: Fundamental concepts of Data Management and Analysis with Elasticsearch.

Guest Trainer **07/2018**
Local Development Training Academy (LDTA), Nepal
A three-day intensive and hands-on training program on Cloud Services, Content Management System, and Project Management Tools.

Guest Trainer **07/2016**
Local Development Training Academy (LDTA), Nepal
A three-hour interactive training session on Mobile Applications' Usage, Security and Earning.

Industry Experience **Software Consultant** **04/2021-07/2022**
Saugal Trading Company Pvt. Ltd., Nepal

Senior Software Engineer, Development Manager **01/2021-03/2021**
Software Engineer, Team Lead **04/2019-01/2021**
Software Engineer **05/2018-03/2019**
Software Engineering Intern **09/2015-04/2018**
Deerwalk Services Pvt. Ltd. (Now, Cedar Gate Technologies)
Product: Deerwalk Plan Analytics
Department: Research and Development
Focus: Worked on and led projects to optimize Elasticsearch queries and extract healthcare data from Elasticsearch cluster for creating descriptive, prescriptive, and trend-based, industry-standard healthcare reports and data visualizations.