

# Ruby Shrestha

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## 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.

	<b>Independent Research Study as Alumna</b> <span style="float: right;"><b>05/2018-08/2018</b></span> 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.
	<b>Research Assistant</b> <span style="float: right;"><b>03/2017-05/2017</b></span> 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.
<b>Publications</b>	<b>DATS: Difficulty-Aware Task Sampler for Meta-Learning Physics-Informed Neural Networks</b> M. Toloubidokhti, Y. Ye, R. Missel, X. Jiang, N. Kumar, <b>R. Shrestha</b> , L. Wang <i>The Twelfth International Conference on Learning Representations, 2024</i> Conference Article  <b>Distributionally Robust Optimization and Invariant Representation Learning for Addressing Subgroup Underrepresentation: Mechanisms and Limitations</b> N. Kumar, <b>R. Shrestha</b> , Z. Li, L. Wang <i>Fairness of AI in Medical Imaging (FAIMI @ MICCAI), 2023</i> Workshop Article  <b>Maze Solving with Anomaly Tolerant Dead End Filling and A*: Implementation and Analysis</b> <b>R. Shrestha</b> <i>Deerwalk Journal of Computer Science and Information Technology, 2019</i> Journal Article
<b>Manuscripts Under Review</b>	<b>Anonymous manuscript, ICLR 2026 (double-blind)</b> Overview: Robust generative modeling under training dataset correlation  <b>Re-Examining the Impact of Observed Feature Correlations on Minority Image Generation</b> <b>R. Shrestha</b> , N. Kumar, A. Gopi, B. Lekhak, L. Wang <i>IEEE Transactions on Pattern Analysis and Machine Intelligence, 2025</i>
<b>Conference Presentations</b>	<b>Maze Solving with Anomaly Tolerant Dead End Filling and A*: Implementation and Analysis</b> <i>Fifth International Conference on Information Technology for Development, 2018</i>  <b>Blended Learning in DWIT College: From Learners Perspective</b> <i>Fourth International Conference on Information Technology for Development, 2017</i>
<b>Teaching Experience</b>	<b>Workshop Instructor</b> <span style="float: right;"><b>01/2019-03/2019</b></span> Deerwalk Institute of Technology, Tribhuvan University, Nepal Course: Fundamental concepts of Data Management and Analysis with Elasticsearch.  <b>Guest Trainer</b> <span style="float: right;"><b>07/2018</b></span>

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.