

# Ruby Shrestha

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## Contact Information

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Rochester, NY 14623 USA  
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## Research Interests

Deep Generative Models; Causal Modeling; Counterfactual Generation; Fairness and Distributional Robustness under Attribute Correlations

## Education

**PhD, Computing and Information Sciences** **2022-Present**  
Rochester Institute of Technology, Rochester, NY, USA **GPA (4.00/4.00)**  
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 Areas: Counterfactual generation with causal generative models; robust generative modeling under attribute correlations; fairness and distributional robustness of deep learning models.

**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**

**ProReGen: Progressive Residual Generation under Attribute Correlations**  
**R. Shrestha**, A. Gopi, C. Meisenzahl, B. Lekhak, L. Wang  
*The Fourteenth International Conference on Learning Representations, 2026*  
Conference Article

**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 [*\*equal contribution*]  
*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

**Manuscript Under Revision**

**Re-Examining the Impact of Observed Feature Correlations on Minority Image Generation**  
**R. Shrestha**, N. Kumar, A. Gopi, B. Lekhak, L. Wang

**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.