Jeevan Thapa

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Research Interests

Continual Learning, Test-Time Adaptation, Continual Federated Learning,
Application of Deep Learning Models to Real World Problems

Education

Rochester Institute of Technology (RIT) Rochester, NY
Ph.D. in Computing and Information Sciences (CGPA: 3.97/4) *Aug 2022 - Present*
Relevant Courses: Statistical Machine Learning, Deep Learning, Non-Convex Optimization for Modern Machine Learning

Institute of Engineering, Tribhuvan University Lalitpur, Nepal
Bachelor's Degree in Computer Engineering from Pulchowk Campus *Nov 2015 - Sep 2019*
Relevant Courses: Data Mining, Artificial Intelligence, Big Data Analytics, Probability and Statistics

Publications

Jeevan Thapa, Rui Li (2024). Bayesian Adaptation of Network Depth and Width for Continual Learning. In Forty-first International Conference on Machine Learning (**ICML 2024**).

Research Experience

Graduate Research Assistant *Aug 2022 - Present*
Rochester Institute of Technology (RIT) Rochester, NY

- Developed a Bayesian continual learning framework to adapt network structure in dynamically evolving environments. Part of this work was published in ICML2024.
- Worked on structure adaptation in the graph neural network.

Professional Experiences

Machine Learning Engineer *Sep 2019 - Jun 2022*
Fusemachines Kathmandu, Nepal

- Designed machine learning pipelines and implemented deep learning models for three industry projects.
- Developed course materials for Fusemachines microdegree, covering Computer Vision, transformer-based Natural Language Processing, and Time Series Analysis.

Instructor for "Mathematics for AI" *Jan 2021 - Jun 2021*
fuse|ai, Herald College Kathmandu, Nepal

- Instructed an undergraduate course on foundational machine learning topics, including Linear Algebra, Calculus, Probability and Statistics, and Information Theory.

AI Intern *Jan 2019 - Jun 2019*
Leapfrog Technology Kathmandu, Nepal

- Developed a ResNet-based license plate localization system, designed for Nepalese vehicles.
- Built a face recognition system with face detection, point-based face alignment, face embedding model, and nearest-neighbor classifier.

Projects

Bayesian Network Structure Adaptation for Continual Learning *RIT*

- Developed a continual structure adaptation framework that integrates beta-Bernoulli processes for structure inference within the sequential Bayes framework, enabling dynamic evolution of both network depth and width in continual learning scenarios.

Human Trafficking Recognition from Sex Worker Ads and Inter-Ad Matching *Fusemachines*

- Led the team in designing and developing a machine learning pipeline to identify probable trafficking activities from videos, images, and captions in online advertisements.
- Developed multi-modal (image + text) trafficking recognition networks, contrastive loss-based image search, face-based identification, and transformer-based social handle extraction for ad matching.

Waste Type Detection *Fusemachines*

- Developed a lightweight single-shot object detector based on MobileNet and focal loss, capable of classifying waste types and disposal intent, and successfully deployed on edge devices (Jetson Nano).

Analysis of Radio Panelists Data *Fusemachines*

- Conducted statistical analysis to evaluate the impact of factors such as song quality, commercial length, and time of day on the number of panelists, utilizing custom metrics and statistical tests.

Nepalese License Plate Recognition (Undergraduate Project) *Tribhuvan University*

- Developed a license plate recognition system, tailored for Nepalese license plates, with three key stages: vehicle detection, license plate localization, and Nepalese character recognition.
- Created a license plate localization dataset by annotating Nepalese vehicle images, and a Nepalese character recognition dataset using Devanagari fonts.

Skills

Programming Languages	Python (advanced), C, C++
Deep Learning	PyTorch (advanced), TensorFlow, Keras
Machine Learning	scikit-learn, NumPy, Pandas, Matplotlib, Seaborn, MLflow
Miscellaneous	LaTeX, Git, Bash, Jira, Linux, AWS

Awards and Honors

RIT Ph.D. Scholarship/Assistantship. Financial Support at RIT to pursue a Ph.D. in Computing and Information Sciences via NSF Grants.

Full Scholarship at Tribhuvan University. Awarded by Nepal Government for achieving 11th rank out of 12000 students in entrance examination (4% acceptance rate).

Fusemachines Artifical Intelligence Fellowship. Selected for a merit-based scholarship program among thousands, and enrolled in MicroMasters program for machine learning.

Talks

Poster Presentation on "Bayesian Adaptation of Network Depth and Width for Continual Learning" at ICML 2024 in Vienna, Austria.

Guest Lecture on "Continual Test-time adaptation" in graduate course - CISC-865 "Deep Learning" at RIT.

Academic Service

- Conference Reviewer for ICLR 2025.