Abhinab Acharya

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EDUCATION

Rochester Institute of Technology   Rochester, NY
PhD, Computer Science   Aug 2022 – Aug 2027
Area of focus: Continual Learning, Data-efficient/Low Resource AI, Robustness of Foundation Models
Relevant Coursework: Statistical ML, Deep Learning, Data-Driven Knowledge Discovery, Non-Convex Optimization

Tribhuvan University   Lalitpur, Nepal
Bachelors, Electrical Engineering   2013 – 2017
Relevant Coursework: Artificial Neural Network, Probability and Statistics, Computer Programming, Microprocessors

EXPERIENCE

Rochester Institute of Technology   Rochester, NY
Research Assistant   Aug 2022 – Present

- Developed a novel *Subset Selection* method for *Data-Efficient ML* to balance diversity and difficulty of selected samples resulting up to **6% image classification accuracy improvement** over SOTA; Models: ResNet, EfficientNet; Algorithms: Submodular Optimization; Datasets: CIFAR, SVHN, TinyImageNet, ImageNet
- Developed a web application, *Data-Science Learning Platform,* using Flask, React and MongoDB; used as part of *Principles of Computing Immersion* course; **used by 100+ students** (https://tinyurl.com/y4e45j2t)
- Solving Continual Learning problem using *Generative Diffusion Models* to efficiently generate old task data (**3% image classification accuracy improvement**); Models: Stable Diffusion, ResNet; Datasets: CIFAR, ImageNet
- Improving Layer-wise vulnerability aware ***Adversarial Robustness*** **by up to 17%** while fine-tuning *Vision Foundation Models;* Model: ViT-B16; Datasets: CIFAR, ImageNetR, CUB; Attacks: PGD/Auto-PDG Attack
- Solving multi-model Continual Learning problem using *Vision-Language Model* based *Mixture of Expert* architecture improving the **image classification accuracy by 4%**; Model: CLIP; Datasets: CIFAR, TinyImageNet
- Mentoring *Video Anomaly Detection* project based on *Vision-Language Model* to **reduce the cost of missing abnormal video frames by 50%**; Models: InternVL, CLIP; Datasets: UCF-Crime, XD-Violence

North Star Developer's Village   Remote
R&D Software Engineer   2019 – 2022

- Developed Machine Learning solutions for *Text Classification* of Clinical Notes; Implemented and deployed server logic for Remote Learning platforms, **used by 50+ universities**

PUBLICATIONS

- *ICML 2024* – Balancing Feature Similarity and Label Variability for Optimal Size-Aware One-shot Subset Selection

ACADEMIC & LEADERSHIP

Teaching Assistant, Rochester Institute of Technology   2023 – 2024

- Lead lab sessions, grading, and mentoring students for Courses: Machine Learning, Computer Science, and Database System; Managing undergraduate students to develop Data Science Learning Platform

Team Manager, North Star Developer's Village   2022

- Managed a new Robotics Department of 3 developers to research and develop robots for education

Team Leader, Tribhuvan University   2015 – 2017

- Lead the Robotics team to compete in ABU ROBOCON 2016, Thailand; Received Best Engineering Award, Panasonic Award, and $500 equivalent reward

TECHNICAL SKILLS

Deep Learning & AI: Vision Language Model, Vision Transformer, Large Language Model, CNN, Graph Neural Network
Programming Language: Python, JavaScript, MATLAB, C, C++, Assembly, R
Libraries & Frameworks: PyTorch, NumPy, Pandas, Matplotlib, Sklearn, SciPy, MySQL, MongoDB