Deep Shankar Pandey

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RESEARCH INTERESTS

- Meta-learning, uncertainty awareness, and robustness in machine learning models
- Application of Deep Learning models to various real-world problems

EDUCATION

Ph.D. in Computing and Information Sciences **Aug. 2019 – Present**

Rochester Institute of Technology, Rochester, NY (GPA: 3.93/4.00)

Bachelors in Electronics and Communication Engineering **Nov. 2013 – Sept. 2017**

Institute of Engineering, Pulchowk, Tribhuvan University, Nepal (Average Percentage: 76.39%)

PUBLICATIONS

- **Deep Shankar Pandey,** and Qi Yu. "Multidimensional Belief Quantification for Label-Efficient Meta-Learning." (Accepted, To appear in CVPR 2022)
- Yuansheng Zhu, Weishi Shi, **Deep Shankar Pandey,** Yang Liu, Xiaofan Que, Daniel E. Krutz, and Qi Yu. "Uncertainty-Aware Multiple Instance Learning from Large-Scale Long Time Series Data." (Dec. 2021, Big Data Conference)
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RESEARCH EXPERIENCE

Graduate Research Assistant **Aug. 2019 – Present**

- Ongoing Work: Develop theoretically guaranteed and adversarially robust uncertainty-aware meta-learning models that can learn from limited data
- Improved Neural Processes: Developed bayesian structures to improve robustness and uncertainty capabilities of Meta-learning models (Under review at ICML 2022)

Efficient Optimization-Based Meta-Learning via Active Task Selection **Aug. 2019 - Aug. 2020**

Work done for successful completion of Research Potential Assessment exam

- In-depth analysis of the SOTA Meta-Learning algorithms and their implementations
- Development of novel active task selection method to improve the performance of the meta-learning models across various classification and regression tasks

PROJECTS

Multimodal Data Fusion to improve Medical Image Understanding

Minor Project as a Part of Course

- Worked on using deep learning models to combine medical image information (image data), gaze information (sequential eye movement data), and verbal narration (text data) of the images for improved performance in downstream classification tasks

Uncertainty aware Decision Making for improved Marine Surveillance

Minor Project as a part of Summer Work

- Worked on development of Bayesian Neural Networks for uncertainty-aware image classification models of maritime vessel images collected from satellites (SAR data)

Face Identification and Classification

Minor Project as a Part of Course

- Dimensionality reduction and feature extraction using Principal Component Analysis
- Face Image Classification using different Classifiers: KNN Classifier, Support Vector Machines, and Logistic Regression

Handwritten Digit Classification

Minor Project as a part of a Course

- Implemented a Neural Network model from scratch in Numpy to solve image classification problems

Implementation of Redirected Walking in Virtual Reality

Final Year Major Project at Institute of Engineering, Pulchowk

- Researched and implemented different algorithms for translational, rotational, and curvature gains in Redirected Walking (C#, Unity, HTC Vive). Made environments using maze-generating algorithms to analyze the performance of the algorithms

SKILLS

Programming Languages: Python, C, C++, C#
Machine Learning and Deep Learning: Pytorch, Scikit-learn, Numpy, MatLab, TensorFlow, and Keras
Leadership: Founder and president of Nepalese Student Association at RIT

PROFESSIONAL EXPERIENCES

Game Developer at Paracosma, Nepal as a part of the core developer team, created game special effects, scripted character behaviors, and game environment logics Nov. 2017 – Apr. 2018
Intern at Paracosma, Nepal as a part of the Game Developer Team: Worked on implementation of character behaviors and game mechanics Dec. 2016 – Oct. 2017
Intern at E&T, Nepal as a part of E&T-TU Collaboration Project for Blockchain Application. Developed dynamic UI interfaces for the project May 2016 – Sep. 2016

COURSES TAKEN

- Mathematics of Deep Learning, Data-Driven Knowledge Discovery, Statistical Machine Learning, Visual Analytics, and Foundations of Parallel Computing (Rochester Institute of Technology)
- Data Mining, Big Data, Artificial Intelligence (Institute of Engineering, Pulchowk)
- Bayesian Methods for Deep Learning, Deep Learning Specialization, Python3 Specialization, Mathematics for Deep Learning Specialization (Coursera)