Bishal Shrestha

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Research Interest

Artificial Intelligence, Machine Learning, Deep Learning, Big Data, Data Mining, Computer Vision

Education Background

- 2023-Present: **Ph.D. in Computer Science**
  - ***University of Miami**, Coral Gables, FL, USA*
  - *Research Assistant in Dr. Zheng Wang's Lab*
- 2017-2022: Bachelor's Degree in Computer Engineering (79.22%)
  - *Tribhuvan University (TU), Advanced College of Engineering and Management (ACEM)*
- 2015-2017: High School (76.30%)
  - *Nepal Education Board (NEB), Golden Gate Int'l College (GGIC)*

Experiences

Intern at Dr. Badri Adhikari's Lab | Sep 2021 - Present

University of Missouri - St. Louis, USA

- Dr. Badri Adhikari remotely mentored my teammates and me in our undergraduate final year thesis titled "Adversarial Image Generation on Nepal's Embossed License Plate Recognition".
- During our internship, we collected our own dataset, designed computational research experiments, and run several deep-learning experiments.

Engineer at Grepsr | May 2022 - Oct 2022

- Developed and maintained real-time web crawlers for numerous companies.
- Developed an E-commerce Site Aggregation application as an in-house project.
- Verification of large amounts of structured data using tools such as Pandas.

Student Researcher, Research and Innovation Unit (RIU), Advanced College of Engineering and Management (ACEM) | 6 months | Apr 2021 - Sep 2021

- Researched Machine Learning (ML) models for churn prediction.
- Implementation, testing, and optimization of ML models with an international expert as an advisor.
- Published paper titled "Industry-Academia Collaboration in Nepal – A case study of Customer Churn Prediction for Worldlink".

Publications

- **B. Shrestha**, G. Khakurel, K. Simkhada, B. Adhikari, "Adversarial sample generation and training using geometric masks for accurate and resilient license plate character recognition", IEEE Transactions on Intelligent Transportation Systems.
- S. Prajapati, M. Engelhardt, A. Shrestha, G. Khakurel, **B. Shrestha**, K. Simkhada, "Industry-Academia Collaboration in Nepal – A case study of Customer Churn Prediction for Worldlink," Himalaya International Conference, 2022.

Projects

- **Adversarial Image Generation on Nepal's Embossed License Plate Recognition (LPR): Major Year Project, May 2021 – May 2022**
  A research project focused on detecting vulnerabilities of the LPR system using different adversarial attacks and creating a robust LPR system using adversarial training on Nepal's License Plate Dataset using Convolution Neural Network (CNN) on PyTorch.
  Project Advisor: Dr. Badri Adhikari

- **Worldlink Pvt Ltd. Customer Churn Prediction, April 2021 – September 2021**
  A project based on Industry-Academia Collaboration under Research and Innovation Unit (RIU) to predict customer churn using Machine Learning for Nepal's leading Internet Service Provider (ISP), Worldlink in collaboration with an international expert.
  Project Advisor: Max Engelhardt

- **Localized Weather Forecasting on NASA's Dataset, May 2021**
  A localized weather forecasting using ANN with Back Propagation trained on a dataset obtained from NASA Langley Research Center (LaRC) POWER Project.

- **Basic Monolithic Kernel: Minor Year Project, January 2021 – March 2021**
  It is a basic monolithic kernel programmed using Assembly and C++ language that can perform boot process, elementary mathematical operations, and access peripherals: Video Graphics Array (VGA), keyboard, and mouse using interrupt-driven I/O.
  Project Advisor: Er. Ajaya Shrestha

- **Automated Robot in Partially Observable Environment, January 2021**
  An automated robot with sensors capable of line following, obstacle detecting, and maze solving in a static, partially observable, and single-agent environment.

- **Score-based Text Categorization, October 2019**
  A sorting application for academic purposes that uses a score-based algorithm that organizes individual questions to its domain.

- **High-Security Surveillance System, July 2018**
  A surveillance system based on face detection, identification, and tracking using a microcontroller-based embedded system and implementation of Haar Cascade in OpenCV with Python.

- **Remote-controlled Vacuum Cleaner, March 2014**
  A prototype of a remote-controlled vacuum cleaner from scratch powered by a battery that could collect tiny dust particles and light-weighted materials.

Participations

- 16th Feb, 2022 — Himalaya International Conference 2022
  Paper Presentation entitled "Industry-Academia collaboration: A case study of Customer Churn Analysis"

- 4th Dec, 2021 — Science, Engineering and Technology (SET) Conference 2021
  Poster Presentation entitled "Basic Kernel System"

- 29th Nov – 20th Dec, 2021 — Seeds for the Future 2021, organized by Huawei.

- 3rd Jan – 5th Jan, 2021 — Indian Institutes of Technology (IIT) Techfest Bombay, India
  1st runner up in National Qualifying Round

- 20th Jun – 22nd Jun, 2019 — Techno-Fest 2019
  Sagarmatha Engineering College
  Secured 1st position in Software Competition

- 14th Dec, 2019 — Hackathon organized by Itonics.

- 6th Jul – 7th Jul, 2018 — Sirjana – The Innovation
  Advanced College of Engineering and Management

- 8th Mar, 2014 — Annual Science Exhibition
  Ideal English Higher Secondary School
  Secured 1st position

Leadership

- Class Representative (CR), (Sep 2017 – Apr 2022)
  Advanced College of Engineering and Management (ACEM)

- Webinar Committee Member, (Oct 2020 – Apr 2022)
  Computer and Electronics Department, Advanced College of Engineering and Management (ACEM)

- Served as Executive Member, (Feb 2019 – Feb 2020)
  Project Association for Computer and Electronics (PACE), Advanced College of Engineering and Management (ACEM)

- Coordinator of Various Events, (Feb 2019 – Apr 2022)
  Skill BoostUp-ϒ, AZURE Cloud Computing, ACEM Podcast

- Elected as Head Boy, (Apr 2015 – Apr 2016)
  Ideal English Higher Secondary School

Certifications and Honors

- Semester Scholarships from Advanced College of Engineering and Management for Top Ranked Students. (2017-2022)
- Completed IBM Qiskit Global Summer School. (2020)
- Scientist of the Year from Ideal English Higher Secondary School. (2014, 2015)
- Mr. Ideal 1st Runner UP, Ideal English Higher Secondary School. (2015)
- 2nd position in Chinese examination by International Volunteer Chinese Teachers Home. (2012)
- Massive Open Online Courses (MOOCs) Certifications:

May 18, 2022	Mathematics for Machine Learning – Imperial College London
May 17, 2022	Natural Language Processing with Classification and Vector Spaces
July 21, 2020	Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
June 25, 2020	Neural Network and Deep Learning
July 5, 2020	AWS Machine Learning Foundation
June 24, 2020	Introduction to Cybersecurity – Cisco

References

- Badri Adhikari, PhD
  Assistant Professor
  Department of Computer Science
  University of Missouri – St. Louis
  St. Louis, Missouri
  adhikarib@umsl.edu

- Er. Ajaya Shrestha
  Head of Department
  Department of Electronics and Computer Engineering
  Advanced College of Engineering and Management
  Tribhuvan University, Kathmandu, Nepal
  ajaya.shrestha@acem.edu.np