Rojina Panta

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SUMMARY

I am working on Explainable AI with Deep Reinforcement Learning at the AI Institute, University of South Carolina. My research project mainly deals with finding solutions to the deterministic Markov Decision Process, where we know goal states in advance. We are looking into explaining these solutions to users using Artificial Intelligence. Before starting my Ph.D. journey, I worked for about four years as a Machine Learning Developer and Research and Development Engineer, where I was actively involved in making new Proof of Concept Products from scratch and exploring cutting-edge technologies, which is where my motivation for Ph.D. started.

EDUCATION

Doctorate, Computer Science
University of South Carolina, Columbia, SC, May 2026 (Expected), GPA: 3.8/4
- Deep Learning, Explainable Artificial Intelligence (XAI), Reinforcement Learning, Collaborative Learning

Bachelor of Engineering, Computer Engineering
Tribhuvan University, Lalitpur, Nepal, December 2012, GPA: 80.66%
- Electives: Data Mining, Big Data, Enterprise Application Design and Development
- Minor Project called "Foot-Code, Game Management System," which is based on java to provide a schedule of sports week organized
- Final year project on "Diabetes Prediction using Artificial Neural Network"

EXPERIENCE

Graduate Research Assistant   September 2021 - Present
Computer Science and Engineering, University of South Carolina, Columbia, SC
- Work with Dr. Forest Agostinelli for different funded research projects on Artificial Intelligence and Machine Learning.
- Develop new algorithms, discuss new ideas, and write papers.

Software Engineer/ Data Analyst   May 2020 – January 2021
Tekvortex Pvt. Ltd., Nepal
- API Development.
- Maintain, troubleshoot, and enhance large-scale enterprise applications.
- Work with different protocols to collect data for CPU usage.
- Analysis of massive CPU usage data.
- Configure and manage data sources/solutions like PostgreSQL and Athena.
- Deploy and debug the project in a limited time and deliver functionality in the production environment.

Research and Development Engineer   October 2017– April 2020
JAVRA Nepal, Nepal

- Worked on the image classification data-set, which was not easily distinguishable to the human eye.
- Worked on image segmentation to extract features from the image with 97% IOU (Intersection-over-Union).
- Prepared Proof of Concept to classify email by integrating a Machine Learning app in TensorFlow with NodeJS API.
- Prepared image annotation app capable of selecting required areas in the image and storing their labels in XML format as per data-set requirement for object detection model.
- Carried out research on web assembly, a binary code format supported by different languages to be executed in the web browser, and prepared a simple Proof of Concept.
- Carried out research on TensorFlow serving and deployed machine learning models to serve clients via gRPC and RESTful APIs.
- Worked with low-code platforms like Mendix and Power Apps.
- Prepared speech emotion detection app.
- Worked with Azure Active Directory.

Innovisto Analytics   November 2016 – September 2017
Machine Learning Developer
- Worked on text classification problem in TensorFlow on the company's data-set with 80% training and 64% test accuracy.
- Worked with K-Means and DBSCAN clustering algorithm on the company's data-set.

PUBLICATIONS

- Chaudhuri, Sandeep K., Joshua W. Kleppinger, Ritwik Nag, Kaushik Roy, **Rojina Panta**, Forest Agostinelli, Amit Sheth, Utpal N. Roy, Ralph B. James, and Krishna C. Mandal. "A CdZnTeSe gamma spectrometer trained by deep convolutional neural network for radioisotope identification." In Hard X-Ray, Gamma-Ray, and Neutron Detector Physics XXIII, vol. 11838, p. 1183806. SPIE, 2021.

- Agostinelli, Forest, **Rojina Panta**, Vedant Khandelwal, Biplav Srivastava, Bharath Chandra Muppasani, Kausik Lakkaraju, and Dezhi Wu. "Explainable Pathfinding for Inscrutable Planners with Inductive Logic Programming." In ICAPS 2022 Workshop on Explainable AI Planning. 2022.

- Chaudhuri, Sandeep K., Joshua W. Kleppinger, OmerFaruk Karadavut, Ritwik Nag, **Rojina Panta**, Forest Agostinelli, Amit Sheth, Utpal N. Roy, Ralph B. James, and Krishna C. Mandal. "Synthesis of CdZnTeSe single crystals for room temperature radiation detector fabrication: mitigation of hole trapping effects using a convolutional neural network." Journal of Materials Science: Materials in Electronics 33, no. 3 (2022): 1452-1463.

- Agostinelli, Forest, **Rojina Panta**, and Vedant Khandelwal. "Specifying Goals to Deep Neural Networks with Answer Set Programming." In ICAPS 2023 Workshop on Human-Aware Explainable Planning. 2023.

COMPUTER SKILLS

- **Programming Languages:** Python, Prolog, NodeJS, R
- **Web Development Languages:** HTML, CSS
- **Tools:** Nvidia Digits, TensorBoard, Docker, Mendix, Power Apps
- **Python Libraries:** Pytorch, TensorFlow, TensorFlow Serving, Keras, Numpy, Matplotlib, Scikit Learn, Pillow (PIL)
- **Operating Systems:** Windows, Linux, Mac

HONOR/ AWARDS

- **Nominated for employee of the month**　　　　　　　　　June 2018
  While working as Research and Development Engineer at Javra Nepal
- **Ranked fourth in Computer Engineering**　　　　　　　February 2017
  Provided by IOE, Tribhuvan University, for getting the fourth rank among all the students at Computer Engineering Department
- **IOE Semester Scholarship**　　　　　　　　　　　　　August 2012
  Provided by Tribhuvan University and Himalaya College of Engineering for academic excellence
- **Full Scholarship for studying Intermediate Level**　　　June 2010
  Provided by Grammar Public Higher Secondary School, Nepal

POSTERS

- AIISC Retreat　　　　　　　　　　　　　　　　　　　October 2022
- CSE Research Symposium, University of South Carolina　　June 14 2023
- Discover USC, University of South Carolina　　　　　　　June 21 2023

PROFESSIONAL SERVICES

- **Reviewer**
  - International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT'21)
- **Youtube**
  - Youtube channel that provides a guide in applying to universities in the United States of America, `https://www.youtube.com/watch?v=zGhTBm58AGE`
- **Community Services**
  - Volunteered at Big Data Health Science Center Conference at the University of South Carolina, 2023
  - Member of Nepalese students community at the University of South Carolina, 2021 - Present
  - Organized Hour of Code by code.org
  - Trained juniors on behalf of Himalaya IT Club