Prashaman Pokharel

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INTRODUCTION

I am a multi-faceted and driven engineering student pursuing my undergraduate in Computer Science and Engineering from the Vellore Institute of Technology. I am very passionate about AI in healthcare, Deep Learning, Big Data, Blockchain, and Cyber Security projects, and have been an active participant in courses and events that are centric on these subjects. Currently aspiring to further my education, I am preparing to embark on a master's degree journey.

EDUCATION

B.Tech Degree (CSE Branch) **Expected in 2024**
Current CGPA: 8.03

SKILLS

Tools and Technologies	TensorFlow, Pytorch, Keras, scikit-learn, Hadoop, Apache kafka, Apache druid, Apache Spark, NLTK, ChatGPT, Git, Azure, AWS, Google Cloud, Virtual Box, Wireshark.
Programming Languages	Python, R, C++, C, SQL, MongoDB, PHP, Java/Javascript, HTML
Operating System	Windows 11/ 10 / 7, MAC OS X and Linux
Soft Skills	Problem Solving, Leadership, Communication skills, Team Work & Analytical Skills

EXPERIENCE

Intern March 2022 - Aug 2023
Data Analyst *Kathmandu, Nepal*
Karajanha Municipality

Collaborated with various municipal departments to gather and analyze data related to citizen services, identifying trends and patterns to enhance overall service efficiency.

Collaborated with the communications team to analyze social media and online engagement data, providing insights into public sentiment and optimizing digital communication strategies.

Collaborated with the public health department to analyze dengue-related data, including reported cases, geographical distribution, and demographic factors, providing insights to inform targeted prevention and intervention strategies.

Provided regular reports and presentations to municipal leadership, translating complex data into actionable insights to guide decision-making and resource allocation for improving public services, addressing community needs, and for effective public health management.

RESEARCH WORK

Design & development of medical analysis toolkit with Digital mask recognition Awaiting Publication

The study incorporates a text summarising module that pulls information about COVID-19 from various news channels' RSS Feeds. The program compresses and analyses acquired textual input using LSTM networks. The Encoder-Decoder

Mechanism's capabilities are also expanded with the addition of a mask detection module that uses Convolutional Neural Networks (CNNs) rather than LSTM. This discovery has the potential to be used in applications like automatic mask adherence monitoring in CCTV footage, which would reduce the need for ongoing human supervision and increase compliance with mask regulations. The techniques and insights given have a long-lasting impact despite the COVID-19 pandemic's waning. Here, Encoder Decoder Mechanism, LSTM, and CNN together create a flexible framework that can be used in a variety of settings. The results of this study hold the potential for effective information distillation and regulation conformity in an ever-changing environment as nations navigate the post-pandemic world. Research Paper Link

Enhancing Traffic Management and Privacy Preservation through Federated Siamese Networks and Real-time Analytics using Apache Druid Ongoing Project

This research project aims to develop an advanced traffic management system that combines real-time traffic analysis, privacy preservation, and federated learning. By utilizing Kafka for data conversion, Siamese networks for traffic analysis, and Apache Druid for analytics, we intend to provide users with up-to-date traffic information while respecting their privacy through federated learning techniques.

PROJECTS

Real-Time Pedestrian Detection – Social Distancing: The framework uses an object recognition paradigm to identify humans in multiple Image Sequences. The detection model identifies people using detected bounding box information. Using the Euclidean distance, the detected bounding box centroid's pairwise distances of people are determined. To estimate social distance violations between people, an approximation of physical distance to pixel is used and a threshold is set. A violation threshold to evaluate whether or not the distance value breaches the minimum social distance threshold is established. Moreover, a tracking algorithm is used to detect individuals in video sequences such that the person who violates/crosses the social distance threshold is also being tracked. (Project Link)

Jobility: A Job Portal for Physically Challenged People- Jobility's main objective is to make it easier for people with physical limitations to get employment so they can live independent lives. By linking them via the internet, the platform also aims to close the gap between companies and job seekers, allowing employers to hire diligent and deserving people. (Project Link)

Imbalanced Breast Cancer Classification Using Federated Learning: In this project, I use the popular EfficentNet-B0 as the base model and complement it with several state-of-the-art techniques to improve the overall performance of the system. With the ImageNet dataset taken as the source domain, we apply the learned knowledge in the target domain consisting of histopathological images. With experimentation performed on a large-scale dataset consisting of 277,524 images, we show that the framework proposed in this paper gives superior performance to those available in the existing literature. Through numerical simulations conducted on a supercomputer, we also present guidelines for work in transfer learning and imbalanced image classification. (Project Link)

EXTRA-CURRICULAR ACTIVITIES

- Served as a Core Committee Member in various chapters within IEEE. During this period, guided several peers in their projects, took several technical sessions, and conducted reviews of the projects of the members of the chapter.
- Participation in Multiple Hackathons- Smart India Hackathon, multiple VIT internal Hackathons
- I engaged in freelancing during the COVID-19 pandemic, expanding my while adapting to remote work opportunities.
- Highly enthusiastic about Swimming, Singing, Football, and Cricket.

Awards/Achievements

Science Fair (Winner/first runner up) – High School, State/Regional (Grade 8 to 12)
Science Outstanding Student Award- High School (Grade 10)
National Informatics Olympiad: Selected for top 30 among thousands of students all over Nepal
MUN/Debate: Participation and won numerous national and international Model United Nations, Debate, and Extempore
Awarded by Governmental organizations & NGOs for Social campaigns and Community Service