RONAST SUBEDI

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EDUCATION

MS in Computer Science/Thesis(4.0 GPA), Florida State University   Jan 2023 – Present
Courses: Advanced Algorithms, Advanced Data Mining, Weakly Supervised Machine Learning, Data Science, Computer Vision

Bachelor's in Computer Engineering, Institute of Engineering, TU, Pulchowk Campus   Nov 2016 – April 2021
Courses: Data Structures and Algorithms, Software Engineering, Object-Oriented Analysis, Database, Probability and Statistics, Artificial Intelligence

EXPERIENCE

Machine Learning Research Assistant   Jan 2023 – Present
Florida State University   Tallahassee, Florida
- Formulated an Active Learning (AL) algorithm to select informative data subsets from 3D molecular datasets. Leveraged regression-based 3D Graph Neural Networks for molecular property prediction, resulting in over a 7% performance improvement compared to baseline AL methods. Poster presentation at **NeurIPS 2024 Conference**
- Developed an Extract, Transform, and Load (ETL) pipeline using Python, NumPy, and Pandas for the time series data of cognitive training programs
- Performed data analysis and feature engineering by applying clustering techniques and visualization tools to analyze participants' playing patterns. Generated reports that provided actionable insights for improving cognitive training programs
- Designed CNN models to predict adherence of individual participants. Implemented domain adaptation techniques to optimize accuracy, recall, and F-score metrics by over 15%

Machine Learning Engineer   April 2021 – Dec 2022
Redev Technology   London, UK
- Researched on medical image semantic segmentation problem and formulated a self-supervised multi-task method by incorporating Histogram of Oriented Gradients prediction as an auxiliary task, improving the IoU metric by up to 13% compared to standard baselines like UNet and U2Net. Published findings in the **Medical Image Analysis Journal**
- Led the development of end-to-end Machine Learning pipelines, streamlining data collection and preprocessing, model training, optimization, and deployment in edge devices for object detection and classification problems
- Evaluated State-of-the-Art (SOTA) models including YOLOv5, Mask-RCNN, and Faster-RCNN for detection tasks, optimizing mean Average Precision (mAP). Selected YOLOv5 based on performance metrics, resulting in a 5% increase in mAP for person, vehicle, and fire detection
- Contributed to the design and development of data-driven Active Learning pipeline for data annotation, integrating *Coreset* and *Learning Loss* algorithms, reducing data annotation costs by up to 30%

Machine Learning Intern   May 2019 – Nov 2019
UBL R&D Center   Lalitpur, Nepal
- Engineered a generalized image annotation pipeline for Computer Vision problems. Deployed pre-trained ResNet-101 on AWS SageMaker, boosting annotation speed by 80%

SKILLS

Programming Language	Python, C, C++, Java, JavaScript, SQL
Web Framework	Django, Flask, ReactJS, NodeJS
ML Framework	PyTorch, TensorFlow, PySpark, scikit-learn, OpenCV, Pandas, NumPy, SciPy, Matplotlib
Tools	Linux, Git, Docker, AWS, GCP, LaTeX

PROJECTS

Image-Audio Conversion
- Built an end-to-end pipeline converting images to text, text to story, and story to audio using Hugging Face APIs, LangChain, and GPT-4.5 model

Image Super-Resolution
- Researched and implemented Generative Adversarial Networks to enhance the resolution of real-world low-resolution images by a scale factor of 4

Academic Program Management Software
- Developed a full-stack web application to manage records of programs, faculties, and students, and automate document generation tasks, reducing weekly manual workload by up to 4 hours

ACHIEVEMENTS

- Published 6 research papers(61 citations) in Journals and Conferences
- Secured first place in the EndoVis Fetreg challenge at MICCAI 2021
- Attended PRAIRIE MIAI Artificial Intelligence Summer School, 2021, with a full scholarship