Rituja Pardhi

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Work History

04/2023 – 09/2024

Student Research Assistant – Deep Learning
Fraunhofer FKIE
Wachtberg, Germany

- Implemented training pipelines, conducted experiments, monitored performance, and visualized the results of trained ML models.
- Accelerated the task of designing the best Graph Neural Network by 25% by integrating it with GraphGym (PyG).
- Developed a codebase using PyTorch and Gymnasium to solve graph combinatorial optimization problems using Deep Reinforcement Learning.

11/2022 – 04/2023

Student Research Assistant – Geospatial 3D map generation
RWTH Aachen University
Aachen, Germany

- Developed an interactive 3D map with over 10,000 GeoJSON data points to visualize CO_2 emissions across Europe using Mapbox GL JS.
- Improved rendering speed by 30% through the implementation of 3 zoom levels, with the lowest level showing clustered data points using the DBSCAN algorithm.
- Enhanced functionality by 20% by adding advanced filtering options and improving user exploration capabilities.

Projects

03/2024 – 09/2024

Identifying key nodes in Complex Networks with Deep Reinforcement Learning

- Improved sample efficiency by 90% by fine-tuning a pretrained Deep Reinforcement Learning agent.
- Identified key nodes using Graph Neural Networks, Deep Q-Networks, and Transfer Learning with PyTorch and Gymnasium.
- Conducted 15 experiments and identified the best hyperparameters using MLflow, TensorBoard, and Optuna.

04/2023 – 09/2023	**Network Analytics Lab Course**

- Implemented centrality and clustering algorithms to analyze the LobbyView network (U.S. legislation).
- Developed the node2vec algorithm and Graph Isomorphism Network (GIN) from scratch to embed nodes.
- Applied machine learning classification algorithms to determine the party membership of legislators.

07/2019 – 05/2020	**Identification of Medical diseases using Deep Learning**

- Developed a generalized disease identification platform using Convolutional Neural Networks.
- Achieved 90% accuracy in detecting pneumonia (bacterial vs. viral) from lung X-ray images.
- Diagnosed retinal diseases from Optical Coherence Tomography (OCT) images with 93% accuracy.

Education

10/2021 – present	Master of Science in Media Informatics (GPA: 1.6/4) RWTH Aachen University Aachen, Germany
07/2016 – 04/2020	Bachelor of Computer Engineering (GPA: 9.18/10) Savitribai Phule Pune University Pune, India

Additional Skills

Languages
- Hindi (Mother Tongue), English (C1), German (B1)

Digital Skills
- **Programming Languages:** Python, C, C++, Java, SQL
- **Programming Frameworks:** PyTorch, Tensorflow, PyTorch Geometric, Keras, MLflow, Optuna, TensorBoard, Matplotlib, Seaborn, Bokeh
- **Technologies:** Deep Learning, Computer Vision, Git, Network Analytics, Linux

Technical Certification

Deep Learning Specialization (Coursera)
Machine Learning (Coursera)

Ritija Pardhi