Avnish Singh

⦿ Raipur, Chhattisgarh, India ✉ avnish1708@gmail.com ▢ +91 9136222956 🔗 in/avnishs17

SUMMARY

Data Science professional specializing in machine learning and deep learning, with focus on neural networks and graph-based architectures. Currently conducting research on advanced threat detection using GNNs at NIT Raipur. Demonstrated expertise through end-to-end projects in model development, containerization, and local deployment. Proficient in Python, PyTorch, and modern ML tools.

EXPERIENCE

Junior Research Fellow | NIT Raipur | Raipur, Chhattisgarh, India | July 2024 - Present

· Investigating various Graph Neural Network (GNN) architectures to generate node embedding representations from system log provenance graphs, with the goal of enhancing threat detection capabilities.
· Evaluating model performance across multiple benchmark datasets including DARPA E3 CADETS, Theia, TRACE, and StreamSpot to develop robust frameworks for anomaly detection and classification.
· Conducting experimental analysis of different neural network architectures to identify optimal approaches for detecting malicious system activities through log analysis.
· Strengthening APT detection research by reproducing and validating results from recent papers, showcasing ability to identify and correct implementation errors.

PROJECTS

Sentiment Analysis with Kubernetes Deployment | github.com/avnishs17/sentiment_analyis | September 2024 - October 2024

· Built a robust sentiment analysis service using DistilBERT model architecture, implementing efficient API endpoints with FastAPI and Hugging Face Transformers.
· Containerized the application with Docker, incorporating NVIDIA GPU support for enhanced performance.
· Successfully implemented and tested Kubernetes deployment in local environment using Docker Desktop and Minikube, showcasing understanding of container orchestration principles.
· Configured horizontal pod autoscaling (HPA) for efficient resource management in the Kubernetes cluster.

Paranoid Schizophrenia Classification using Graph Neural Networks Applied on EEG brain data | November 2023 - May 2024

· Developed a hybrid GCN-LSTM model achieving more than 97% accuracy in paranoid schizophrenia classification from EEG data.
· Engineered graph representations and pre-processing pipelines for EEG signals, improving model reliability by 12%.
· Conducted extensive cross-validation testing, demonstrating robust generalization with consistent performance.
· Co-authored research paper "GCN-LSTM: A hybrid Graph Convolutional Network model for Schizophrenia classification" in Biomedical Signal Processing and Control (2025), contributing to the development of a novel machine learning approach for schizophrenia detection.

Food-Not Food Image Classification | April 2024 - April 2024

· Designed and implemented a TensorFlow + Keras CNN model achieving 93.67% training and 87.28% validation accuracy on a custom curated dataset.
· Improved model generalization by 8% through strategic incorporation of Batch Normalization and Dropout layers.
· Integrated Weights & Biases for performance monitoring, resulting in a 20% reduction in model optimization time.

EDUCATION

Master of Science in Data Science (Computational science and Applications) | Banraras Hindu University | 8.23

Varanasi, UP, India | 2024

Bachelor of Science in Computer Science | DG Ruparel College of Arts, Science and Commerce | 8.75

Matunga west, Mumbai, India | 2022

CERTIFICATIONS

Machine Learning Specialization | Coursera DeepLearning.AI

Programming for Data Science with Python | Udacity Bertelsmann Next Generation Tech Booster Nanodegree Program

SKILLS

Programming Languages: Python, MySQL,
Tools and Technologies: Pytorch, Scikit-learn, Pandas, Numpy, Matplotlib, Seaborn, Git/GitHub, Jupyter Notebook, VS Code, Docker, WSL2
Areas of Interest: Machine Learning, Deep Learning, Data Analysis, Data Visualization, Data Science, Artificial Intelligence, Advanced Persistent Threat detection