Vedika Srivastava

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EDUCATION

MS in Artificial Intelligence: GPA: 3.84 / 4
Boston University | Boston, MA

BTech in Electronics and Communication Engineering (AI Minor): CGPA: 9.79 / 10 (Bronze Medalist)
MIT-World Peace University | Pune, India

WORK EXPERIENCE

AI Engineer 1 Since Mar 2024
Time Machine Learning Inc. | Remote

- Architected to **VectorDatabase** and **RAG** development harnessing **all-mpnet-base-v2** for **vector embeddings**, advancing knowledge creation through proficient **prompt engineering** and **MLOps**, focusing on system optimization to enhance performance and scalability by **25%**.

Teaching Assistant – CAS CS 506 Computational Tools for Data Science Jan 2023 – Dec 2023
Boston University - College of Arts and Science | Boston, MA

- Guided and managed over 30+ labs & office hours focusing on **regression**, **classification**, **PCA**, **LDA**, **NeuralNets**, emphasizing **data normalization/validation** to enhance AI/DS skills of 200+ students utilizing **Python**, **sklearn**, **TensorFlow**, and **PyTorch**.
- Reviewed assignments on **K-means**, **KNN**, **SVM**, **GMM**, offering in-depth support on advanced concepts such as **TF-IDF**, **Word2vec** & **GANs using NLTK**, **SpaCy**, and **Gensim**.

Data Science Fellow May 2023 – Jul 2023
Institute of Global Sustainability | Boston, MA
Advised by NREL (National Renewable Energy Laboratory)

- Orchestrated comprehensive research on energy insecurity, leveraging **RECS**, **Justice40**, and **LEAD datasets** to uncover actionable insights.
- Crafted **interactive dashboard** using **Plotly**, harmonizing disparate data for comprehensive **energy analysis** & **strategic decision making**.

SDE Research Intern Jan 2022 – Jul 2022
IBM | Pune, India

- Revamped & optimized **Quarkus framework** for **Java-based Microservice**, migrating the microservice to enhance performance & efficiency.
- Partnered with cross-functional team in Singapore to modify **IBM Security Verify**, equipping it to support **Open JDK 11** resulting in **50% reduction in resource usage** and **13% increase in overall efficiency** through **code optimization** and **performance tuning**.

NLP Research Intern Oct 2020 – Jan 2021
Tech Mahindra | Pune, India

- Engineered a pioneering **Sanskrit-based voice bot**, leveraging **data analysis, web scraping** from 20+ data sources & **MySQL** database operations using **Python**, **Beautiful Soup**, **NLTK**, and **SQL**.
- Conducted comprehensive algorithmic research over **11+ algorithms**, contributed to building backend functionalities, and fine-tuned model for superior performance. The study showed notable improvements in **accuracy**, **response time** and potential **scalability** over **1500+** languages.

PROJECTS

Geolocating ISS Images
Collaboration with TERC, Cambridge, MA

- Deployed **Docker-based tool** leveraging **VGG-16 ImageNet**, **SIFT**, & **GPT-4 Vision model** with an accuracy of more than **75%** for precise geo-tagging of aerial photos captured by ISS satellites and more than **90%** accuracy in getting a rough estimation of actual location.

Conversational Stock Investment Advisor

- Crafted advanced **NLP-driven investment advisor** deployed on **AWS** combining **Python**, **Rasa**, **NER**, **BERT**, **& DialogGPT**. Achieved **92%** accuracy in user query understanding & responses by integrating real-time data from **Alpaca** & **Alpha Vantage** with **sentiment analysis**.

A Comparative Study of Style Transfer Models

- Analyzed and enhanced four types of **Neural Style Transfer** models using **SCC**, **PyTorch**, **TensorFlow**, and **OpenCV**, analyzing **FID**, **SSIM**, **LPIPS**, quality, and speed metrics. Achievements include **20% improvement** in style **quality** and **30% reduction** in inference **time**.

Biased Prosecution Project
Joint initiative with Committee for Public Counsel Services, Boston, MA

- Applied expert **data analysis** skills and employed **ML techniques**, including **Chi-Square tests**, **logistic regression**, & **decision trees** for deep analysis of **5,000+ case records** of prosecution data, revealing critical sentencing biases impacting policy discussions at a **statewide** level.

Responding to Drone Swarm
Association with Tech Mahindra Maker's Lab, Pune, India

- Spearheaded a team in evaluating and implementing **CNN**, **YOLOv5**, and **SSD** enabling real-time drone detection on resource-constrained devices with a **success rate of 90%** to help **military** promptly identify and respond to a drone attack.

SKILLS

Programming Languages and Frameworks: Python, JAVA, C/C++, TensorFlow, PyTorch, Quarkus, Kotlin, Docker, RASA, LangChain, Pinecone
Artificial Intelligence: Machine Learning, Deep Learning, Data Science, Natural Language Processing, Computer Vision (CV), Transformers, Data Annotation & Labeling, Dimensionality Reduction, LLMs (Large Language Models), Hugging Face
Software Development and Integration: SQL, Git/GitHub, RESTful, Model Deployment & Scaling, Agile Methodologies, API Integration

PUBLICATIONS

- NLP based AI Powered Sanskrit Voice Bot
- Virtual Voice Assistant for Smart Devices
- Drone Detection using YOLO and SSD: A Comparative Study
- A Comparative Study of Neural Style Transfer Models *(To be published in ACM)*
- Reviewed for Data & Knowledge Engineering, 0169-023X, Elsevier, Inc., 2023 and DEMAI, IEEE, 2023