Ruthvik Kilaru

rkilaru@hawk.iit.edu | 312-721-1326 | 401 E 32ND ST, Chicago, IL, 60616 | Linkedin

EDUCATION

Illinois Institute of Technology, College of Computing   **Chicago, IL**
Master's in information technology (Data Science specialization)   May 2024
- Cumulative GPA: 3.83/4.0
- Relevant Coursework: Machine Learning & AI, Data Warehousing, Advanced Database Management, Data Analysis

National Institute of Technology, Jamshedpur   **Jamshedpur, India**
Bachelor of Technology, Domain: Mechanical and Material Science   May 2019
- Cumulative GPA: 3.21/4.0
- Relevant Coursework: Engineering Algebra, Calculus, Fluid Mechanics, Data Analytics.

PROFESSIONAL EXPERIENCE

Illinois Institute of Technology   **Chicago, IL**
Research & Teaching Assistant   *Jan* 2023 - Present
- Led collaborative research on **student behavior's impact on academic performance**, employing advanced techniques for person detection, emotion recognition, and posture tracking using algorithms like **Yolo, HaarCascade, PoseNet, Openpose, and AlphaPose.**
- Prototyped an **Educational Advising Chatbot** based on **RAG** architecture using **Langchain on AWS**, demonstrating the integration of sophisticated AI frameworks and cloud platforms.
- **Prepared the data source** for the RAG-based chatbot, leveraging web scraping tools such as **BeautifulSoup and Unstructured.io**, which involved collecting and structuring data from the web efficiently.
- Enhanced the performance of chatbot by **fine-tuning and prompt fine-tuning it with synthetic data** generated using **LLMs** and **CI workflow**, applying the **Evol Instruct method** and **Contrastive Learning** to achieve better metrics.
- Facilitated instructor-led recitations, graded coursework, and resolved 250+ student queries, conducting 30+ interactive sessions, boosting engagement. Co-developed a Python grading algorithm with Professor Yong Zheng, automating processes and saving 40 TA hours.

Genesis Solutions   **Hyderabad, India**
Data Scientist   Jan 2021- May 2022
- Leveraging advanced regression techniques such as **polynomial regression and ridge regression**, achieved a remarkably low **Root Mean Squared Error (RMSE)** of **5.27** for **Stock Price Prediction Analysis**. This indicates the model's proficiency in accurately forecasting stock prices. Moreover, the **R-squared value** of **0.87** underscores the model's robustness by elucidating that 87% of the variability in stock prices is explained by our regression model.
- Implemented a sophisticated text detection system utilizing **OpenCV** for **image processing** and **PyTesseract** for **OpticalCharacter Recognition (OCR).** Achieved impressive **Precision (0.92), Recall (0.89), and F1-score (0.90),** ensuring precise identification of text regions in images. Additionally, optimized the algorithm for efficiency, enabling it to process images at a remarkable speed of **15 frames per second**, rendering it suitable for real-time applications.

Vedanta Resources Pvt Ltd   **Orissa, India**
Data Engineer   July 2019 - Nov 2021
- Worked on real-time data in the production department to make necessary technical improvements in that area.
- Developed and deployed **Kafka** and **Spark-based** data pipeline(Debezium connectors, Apache hudi, STARGAZE, Hive for metadata), enhancing data throughput by 15% and reducing waste by 10% via real-time analytics of 1+ million daily data points.
- Enhanced **SQL** database for supply chain efficiency, halving query times and cutting inventory costs by **5%** through improved Forecasting.

SKILLS

- **Programming Languages:** Python, R, C, C++, HTML, CSS
- **Big Data & Machine Learning:** PowerBI, Spark, Kafka, VectorDB, SQL(t-SQL, p-SQL)
- **Data Science & Miscellaneous Technologies:** A/B testing, Jira, Shell scripting, ETL, Data science pipelines based on CI/CD, PowerBI(PQ, DAX, Slicers), Snowflake, NLP, GANs, LLMs, APIs(REST), Excel(Power Pivot, VBA, Macros), AWS(EC2, Kinesis streams, S3 buckets, Redshift), Google Analytics(BigQuery) & Ads, Langchain, Github, Docker & Kubernetes.

RESEARCH PROJECTS AND PUBLICATIONS

International Conference on Recent Trends in Computer Science and Technology (ICRTCST)   *IEEE 2021*
Prediction of Maize Leaf Disease Using ML Models
- In my research I implemented **Support Vector Machine (SVM)** techniques that demonstrated superior accuracy in detecting **maize diseases**, achieving a high **accuracy rate** of **95.6%.** This highlights the ability to effectively apply machine learning algorithms to solve real-world agricultural problems.
- By integrating **Discrete Wavelet Transform (DWT)** and **YOLOv5** architecture for **feature extraction** and **disease classification**, my research contributed to a predictive model that increased the precision of crop yield forecasts due to early disease detection, reflected in a **sensitivity improvement** of up to **92.3%.**