Gowtham Pentela

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Summary

Research Assistant skilled in machine learning and data analysis, aligning well with data engineering roles. Notable achievements include: - Attaining 98.4% prediction accuracy in virtual furnace modeling using extensive datasets.- Creating robust interactive dashboards for effective real-time data monitoring.- Improving algorithms for efficient data prediction and integrity analysis.Eager to leverage expertise in enhancing data integrity and performance testing in infrastructure analytics.

Education

Purdue University Northwest **Jan 2023 - Dec 2024**

Masters, Computer Science

- Achievements: GPA: 3.67/4.00
- Coursework: Algorithms, Operating Systems, Programming Languages and Interpreters, Deep Learning, Data Mining and Machine Learning, Software Design

Bharath Institute of Higher Education and Research **Jul 2017 - May 2017**

Bachelor's, Computer Science and Engineering

- Achievements: Grade: 83.2%
- Coursework: Data Structures, Algorithms, Database Systems, C, C++, Java, SQL, System Software

Work Experience

Center for Innovation through Visualization and Simulation (CIVS) **May 2023 - Present**

Research Assistant | Machine Learning *Hammond, Indiana, US*

- Conducted research on Integrated Virtual Blast Furnace, analyzing data from 400+ sensors, utilizing Python to manage data transformation and validating critical parameters like Deadman plugging, Thermal Index, and Missing Thermocouples.
- Applied various machine learning algorithms with a 98.4% prediction accuracy, ensuring data integrity and transformation logic for efficient furnace condition predictions.
- Analyzed 12 years of sensor data with Python, enabling early detection of Deadman plugging with 98% accuracy, emphasizing data accuracy and transformation logic.
- Built interactive dashboards with Plotly for real-time monitoring, working collaboratively with engineers and scientists to ensure performance and functionality.

Accenture

Application Development Associate | Client: CICA(CHUBB)

- Designed, built, tested, assembled, and configured over 10 applications based on specific business requirements, employing CI/CD workflows and reducing deployment time by 30%.
- Developed and maintained technologies for over 5 clients, optimizing operational efficiency by 25% through solutions crafted using Agile methodologies and data cleaning processes.
- Consistently delivered high-quality code on schedule, ensuring data completeness and functionality under stringent project timelines; participated in 20+ code reviews for adherence to best practices including UI testing.

Projects

ASL Sign Language Detection *Sep 2024 - Oct 2024*

- Processed 5GB of ASL image data covering 26 letters and 2 special signs, achieving 99.76% accuracy with a CNN model.
- Applied 3 data augmentation techniques: rotation, zoom, and shift, to enhance model generalization
- Created a real-time ASL detection program using MediaPipe for hand tracking and landmark detection.
- Designed a systematic labeling process for 28 distinct ASL signs, ensuring accurate classification during inference.

Data Analysis *Aug 2024*

- Analyzed the diamonds dataset with 53,000+ entries, focusing on cut, carat, color, and price.
- Cleaned and transformed data using dplyr and tidyverse, reducing inconsistencies by 10%.
- Generated summary statistics for 7 variables to uncover key insights into diamond pricing and weight.
- Created 3 visualizations using ggplot2, bar plots for 5 diamond cuts, scatter plots for price vs. carat, and histograms for price distribution.

- Removed 100+ duplicates and handled missing values to ensure data quality.

Efficient Path Finding and Visualization

- Applied Prim's MST and Dijkstra's shortest path algorithms for efficient US city map navigation, optimizing route calculations and reducing processing time by 25%.
- Developed a comprehensive GUI for visualizing algorithm outputs, which improved data accessibility and clarity, resulting in a 30% boost in the team's ability to generate actionable insights.
- Completed integration and testing phases, ensuring 100% accuracy in algorithm outputs and map visualizations.

Road Crack Detection

- Created a detection model with VGG16, RPN, and ROI pooling, achieving 90% accuracy in identifying road cracks.
- Collected data for road crack detection using Google Maps API.
- Performed classification on the images based on number of cracks in the image by using deep learning techniques.

Skills

- **Programming Languages**: Python, R, JCL, ADSO, IDMS, COBOL, Java
- **Web Technologies**: HTML, CSS
- **Computer Science Concepts**: OOPS, Data Structures, Algorithms, Database Management, Operating Systems, Artificial Intelligence and Machine Learning
- **Database Systems**: SQL, POSTGRE SQL
- **Visualization Tools**: Tableau, Power BI, Excel
- **Software**: MS Office, Excel
- **IDE**: VS CODE, VISUAL STUDIO, Notepad, Jupyter
- **Analytics**: Data Analysis, Data Analytics, Data Visualization, Data Modeling, Data Preprocessing, Data Cleaning
- **Data Warehousing Platform**: Snowflake
- **Version Control**: Git, GitHub, Bitbucket
- **Cloud**: Microsoft Azure
- **Libraries**: Scikit-learn, TensorFlow, PyTorch, Keras, OpenCV, scikit-image, NumPy, Pandas, matplotlib, Seaborn
- **Deep Learning Architectures**: CNNs, RNNs, LSTMs
- **Agile and Project Management**: JIRA, Agile methodologies
- **ETL and Data Tools**: ETL tools
- **Testing and Documentation**: UI Testing, System Documentation
- **CI/CD**: CI/CD workflows

Certifications

- **Google Data Analytics**: Equipped with skills in SQL, R, and data visualization to derive actionable insights for business decision-making. August 2024