Prithvi Raj Singh *Data Analyst*

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SUMMARY

- Proficient in extracting, cleaning, handling missing values, and transforming raw data to derive meaningful insights.
- Strong proficiency in writing efficient code in Python for data analysis tasks.
- Strong understanding of machine learning concepts and applications for predictive modeling.
- Experienced in Data Visualization using Matplotlib and Seaborn libraries.
- Competent in writing advanced SQL queries to extract and manipulate data from relational databases.
- Skilled in statistical techniques for hypothesizing, A/B testing, and regression analysis.
- Experienced in machine learning operations through various tools like MLFlow, W&B, Neptune, and DVC.
- Experienced and passionate about Deep Learning algorithm design and implementation.
- Experienced in handling Big data with PySpark.
- Proficient in writing great technical reports to simply explain complex findings of the analysis.
- Commitment to continuous learning to staying updated on industry trends, emerging technologies, and evolving best practices in data analysis.

TECHNICAL SKILLS

Programming Languages and Tools

- ***Languages*** - Python, C#, VB.NET, Java, SQL, R, C++, BASH, Shell Scripting, Scala.
- ***Machine Learning Tools*** - PyTorch, Tensorflow, Numpy, Pandas, Scikit-learn, Seaborn, SciPy, Pyfolio, PySpark, LLM Prompt Engineering, MLOps, MLflow.
- ***Developer Tools*** - VS Code, Colab, GitHub, JupyterLab, Trello, Linux, Azure, Visual Studio, .NET, OpenCV, LangChain, Data Wrangler, MS SQL Server.

Core Competencies

- Software prototyping, Debugging, Data Analysis and Visualization, Robotics Design, MLOps, Machine/Deep Learning, Reinforcement Learning, Data Science, Generative AI, NLP, Statistical Programming, Unit Testing, Hypothesis Testing, CI/CD/CM/CT, LLM Prompt Engineering, EDA, ETL.

EDUCATION

Master of Science, Computer Science 2021 – 2023 | Lafayette, LA
University of Louisiana at Lafayette

Relevant Coursework: Deep Learning, Data Mining, Image Processing, Pattern Recognition, Design and Analysis of Algorithms, Neural Networks, Reinforcement Learning.
Thesis:- "*Real-time object detection and tracking of fast-moving small objects using RGB-D camera and computer vision techniques*."

Bachelors of Science, Computer Science 2017 – 2021 | Lake Charles, LA
McNeese State University

Minor: Mathematics
Relevant Coursework: Software-Engineering I & II, Object-Oriented Design, Database Design and Implementation, Data Structure and Algorithms, Statistics and Probability, Advanced Calculus I/II, Linear Algebra & Matrix Theory.

PROFESSIONAL EXPERIENCE

Associate Researcher 09/2023 – present | Lafayette
Cyber-Physical and Human Systems Lab, ULL

- Involved in the design, implementation, and optimization of state-of-the-art computer vision algorithms for tasks including small object detection and tracking.
- Spearhead the collection and curation of novel datasets for training and evaluating computer vision models, ensuring the availability of high-quality data for research purposes.
- Plan and execute rigorous experiments to evaluate the efficacy of computer vision algorithms.
- Analyze and interpret the results for scientific publications.
- Assist in other projects by writing or reviewing codes.

Associate Software Engineer 08/2021 – 08/2023
Louisiana Transportation Research Center
- Designed and developed Windows and web form applications using C# and Visual Basic on the .NET framework.
- Implemented CI/CD on the Azure DevOps pipeline to ensure software quality, reliability, and availability.
- Led an extensive training seminar to train Geotech Engineers on newly developed software and new features in existing software.
- Documented software design approach and all reviews and changes made.
- Engaged with Geotech Engineers to collect feedback and implemented software modifications to improve user experience and meet DOTD standards.
- Led legacy code transition from VB6 to modern VB and C# on the .NET framework.

TEACHING EXPERIENCE

Teaching Assistant (TA) 2019 – 2020 | Lake Charles, LA
McNeese State University

ENGR/CS 101
- Conducted frequent proctoring and grading of the tests and quizzes.
- Assisted students in one-on-one and small group settings to provide feedback and support.
- Assisted class instructor in preparation of in-class labs and teaching materials.

Software Engineering (CS410)
- Assumed responsibility for grading quizzes and assignments.
- Collaborated with the course instructor in grading tests and preparation of classroom materials.

RESEARCH EXPERIENCE

Graduate Research Assistant 2021 – 2023 | Lafayette, LA
UL Lafayette
- Conducted research and implementation of computer vision models tailored for Robotics Implementation.
- Collected, labeled, and pre-processed data for advanced tasks like Optimization, Feature Engineering, Outlier Detection, Predictive Modeling, 3D Object detection, and tracking.
- Conducted a comprehensive literature review related to CV, NLP, and algorithmic optimization.
- Implemented AI algorithms to analyze large datasets, improving the efficiency and accuracy of research outcomes.
- Proposed and implemented novel research in 3D object tracking leading to a Master's Thesis.
- Assisted and managed Undergraduate students in their project and poster presentations.

RELATED PROJECTS

Predictive Modeling for Agriculture
- Experimented with feature engineering and supervised ML approach using sk-learn to predict the best-yielding crop.
- Developed a robust multi-class classification model using machine learning techniques to predict the optimal crop for a given field based on essential soil metrics (Nitrogen, phosphorus, Potassium levels, and pH value).
- Implemented effective feature engineering to address multicollinearity issues, ensuring the model's accuracy and reliability in predicting the ideal crop for diverse soil conditions.
- Applied a data-driven approach to enhance decision-making in crop selection, aligning each field's soil condition with the ideal requirements for various crops, ultimately contributing to improved agricultural yield and resource utilization.

Pattern Recognition in Data
- Developed classification, and regression models on different public datasets.
- Experimented with different statistical models like Support Vector Machines (SVM) and Principal Component Analysis (PCA) to find optimal gradient descent models for given data.
- Developed gradient descent Least Mean Square model to find optimal accuracy of Widow Hoff Algorithm.

Learning with Limited Data
- Explored different Neural Networks (CNN, Transformers) efficiency working with a small dataset like CIFAR-10/100, FMNIST, and MNIST.
- Used Data Augmentation and Transfer Learning methods to reduce the training and validation loss of the model.

Investigating Netflix movies
- Performed in-depth exploratory data analysis on the Netflix movies dataset utilizing analytical skills to assess the claim about the average movie duration getting shorter.
- Applied Python programming skills to analyze a CSV file containing Netflix data, demonstrating proficiency in data manipulation and statistical analysis.

- Leveraged analytical findings to determine whether there is a significant trend in decreasing movie lengths on Netflix.

Analyzing TV Data
- Performed data manipulation and visualization on the Superbowl dataset to assess how game viewership has changed over time.
- Performed data analysis to understand how halftime shows at the Superbowl have influenced the viewership.

Clustering Antarctic Penguin Species
- Applied unsupervised learning techniques, specifically Principal Component Analysis (PCA), to reduce dimensionality in the penguins dataset, identifying key features and patterns within the data.
- Utilized standard scaling and one-hot encoding for effective pre-processing, enhancing the quality of the dataset and preparing it for further analysis.
- Implemented k-means clustering on the PCA-transformed dataset to identify natural groupings or clusters within the penguin's data.

Analyze International Debt Statistics
- Performed Exploratory Data Analysis (EDA) using SQL to explore the debt of countries using the World Bank dataset.
- Implemented SQL queries to categorize debt by countries across various developmental sectors.

PUBLICATIONS

Restart-with-Delayed-Retransmission Scheme for Reliable Live Video Streaming at the Edge. (In Review)
IEEE Transaction on Networking

Tracking and Trajectory Forecasting of fast-moving small objects in 3D space. (In Progress)
IEEE TPAMI

PROFESSIONAL DEVELOPMENT

DataCamp Courses
- Machine Learning Fundamentals
- MLOps Fundamentals
- SQL Fundamentals
- Data Analyst with Python (Certification Preparation)
- Python Programmer
- Finance Fundamentals in Python
- Data Scientist with Python (Certification Preparation)

LANGUAGES

Nepali	● ● ● ● ●	Bhojpuri	● ● ● ● ●
Hindi	● ● ● ● ●	English	● ● ● ● ○

ORGANIZATIONS

ACM University Chapter - McNeese State University 05/2020 – 06/2021
President

Robotics Club at McNeese 09/2019 – 05/2021
Founding Member

REFERENCES

Dr. Raju Gottumukkala, *Associate Professor*, UL Lafayette
raju@louisiana.edu

Dr. Catherine Anderson, *Professor Emeritus*, McNeese State University
canderson@mcneese.edu