PRADYUMNA BADA

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EDUCATION

University of Illinois, Urbana - Champaign | GPA 3.8/4 **May 2025**
Master of Science, Industrial Engineering - Advanced Analytics
Coursework: Data Visualization, Big Data, Machine Learning, Data Mining, ML Cloud, Network Optimization

JSS Science and Technology University | GPA 8.5/10 **Nov 2020**
Bachelor of Engineering, Industrial Engineering
Coursework: Statistical Quality Control, C Programming, Linear Algebra, Advanced Calculus, Operations Research, Metrology

SKILLS

Programming: Python, Django, **Flask API**, SQL, **Jenkins**, GitLab, AWS, Docker, Apache Airflow**,** C Programming, Jenkins.
Data Analytics: Pandas, **Numpy**, Streamlit, Matplotlib, Seaborn, PySpark, Databricks, Data Lakehouse, Power BI.
Other Skills: JIRA, **Seagate Product Knowledge**, Lucid Charts, Web Scraping, **Failure Analysis**, Power Query, Data Storage Systems.

PROFESSIONAL EXPERIENCE

Seagate Technology | Engineering Data Analyst Intern **May 2024 – Aug 2024**
- Implemented ETL pipeline to process and analyze high-volume data for characterizing emerging memories (FeRAM).
- Calculated failure metrics, including Bit Error Rates (**BER**) across various address levels, and modeled failure rate (**CFR**) to determine how the error correction code (**ECC**) requirements relate to reliability thresholds.
- Designed a **Python**-based linter to automatically validate YAML configuration files by leveraging testers' domain expertise, reducing lengthy test re-runs.
- Developed unit tests using **Pytest** & integrated them into GitLab and **Jenkins** CI/CD pipelines, streamlining agile development.

Cline Center for Advanced Social Research | Research Assistant **Sep 2023 - Present**
- Engineered data pipelines to extract structured data from 1000+ news articles every day, tracking police use of lethal force.
- Utilized **MongoDB** to ingest articles & vector database (FAISS) for ranking, clustering & deduplication using vector embeddings.
- Reduced manual processing time by 67% (Saving 80 hours/week) using AI workflows, enhancing accuracy & efficiency.

RailTEC at Illinois | Summer Research Intern **May 2023 - Aug 2023**
- Implemented a Vision AI-based tool for railway track inspection, potentially reducing time from nearly 2 weeks to just 3 hours.
- Utilized Databricks, Azure Synapse, & **PySpark** to analyze periodic data for tracking and forecasting rail component health.
- Developed Flask-based **REST API** endpoints to securely deliver real-time data & created visualizations using Power BI & Python.

Sapiens International Corporation | Software Developer **Mar 2021 - Nov 2022**
- Enhanced our Insurtech product using SQL & ETL, enabling **£250k** annual reduction in legacy insurance operational costs.
- Developed **reporting** interfaces using SQL and Scripting, including 'ECASS', a cache facility designed for client's actuarial team.
- Crafted robust SQL scripts to resolve 50+ critical data issues, ensuring data accuracy across policy, claims, & customer datasets.

ACADEMIC PROJECTS

Predictive Maintenance of Milling Machine | Tools: Python, Jupyter Notebook, Scikit-learn. (Demo)
Goal: To predict milling machine failures using real-time performance measures and features to ensure continuous production.
- Developed and compared different ML algorithms using Grid Search CV to achieve an accuracy of 97%.

Inventory Optimization with Demand Forecasting | Tools: Python, SimPy, Prophet, Streamlit, Plotly. (Demo)
Goal: Develop an end-to-end solution for inventory optimization incorporating demand forecasting and simulation.
- Built a stochastic simulation framework using Prophet forecasts (with user-defined scenarios) to evaluate inventory policies.

Internal Stress Prediction in Shape Memory Alloys (SMAs) using DeepONet | Tools: Python, DeepXDE, SciPy
Goal: Predict internal stress in SMAs under deformation using data-driven and physics models.
- Hybrid DeepONet and PINN model predicts stress in SMAs from strain while enforcing elasticity physics constraints.

Displacement and Strain Measurement using Computer Vision | Tools: Python, Pytorch, TorchVision.
Goal: To harness AI for the precise measurement of displacement and strain in objects under load, facilitating real-time monitoring
- Developing CNNs, and other DL models to detect displacement between pair of speckle images.

LEADERSHIP & INVOLVEMENT

- Led the development team in resolving high-priority production issue in the absence of senior team members.
- Certifications - Applied Plotting in Python, Python Data Structures, Databricks, Prompt Engineering, LLM Transformers
- Organized multiple treks to the Great Himalayan Ranges for groups of more than 10.
- Collaborated on creative projects, including short films & travel vlogs. Video1, Video2, Video3, Video4.
- Ensured timely meal service for hundreds of students daily through food servicing, dish cleaning, and table sanitation.