Tarun Kumanduri

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RELEVANT WORK EXPERIENCE

Graduate Research Assistant, The George Washington University   *June 2024 – Present*

- Developed a nitrogen supply chain model analyzing 7+ datasets on crop production, livestock, and trade across 50 U.S. states, primarily focusing on Chesapeake Bay counties, supporting USDA's 2030 nitrogen reduction goal.
- Processed and cleaned 66,000+ NREL energy data files (each with 8,500+ entries) to build a structured energy database for 11,000 U.S. plant locations, enabling renewable energy forecasting and planning.
- Designed 5+ interactive dashboards using Python Dash & R Shiny to support real-time analysis of 100K+ records, improving stakeholder decision-making in environmental and policy projects.
- Applied ML models (K-means, DBSCAN, LSTM) to datasets from NYC, improving taxi demand forecasts by 25% and identifying anomalies in millions of electricity pricing records.
- Framed automated ETL pipelines and web scrapers for 66K+ energy files, reducing data preparation time by 80% and streamlining analysis workflows.
- Used Neo4j to analyze 10K+ SEC filings, revealing connections among 1,500+ executives and uncovering key financial influence trends.
- Built an image and caption validation system using ResNet-18 and CLIP for alignment, BLIP for caption generation, and BERT for similarity scoring, achieving **95% accuracy** on a **National Forensics Department dataset** of **10,000+ image-caption pairs**.

District Data Coordinator, Inqui-Lab Foundation   *October 2022 – July 2023*

- Analyzed real-time student performance data across 7 districts, driving a 35% increase in participation compared to the previous year's challenge, benefiting 64,583+ students in collaboration with UNICEF & the Government of Telangana.
- Automated data collection and reporting using Python, saving 20+ hours per week and allowing focused analysis of student challenges, which were shared with 7 District Science Officers to support timely interventions.
- Modelled dashboards and reports to track engagement metrics, supporting 4,935+ teachers and District Science Officers in optimizing resource allocation and improving student outcomes.

SKILLS

- **Programming :** Python , R , SQL , C , C++ , JAVA, HTML , CSS.
- **Data Engineering & Analysis Tools:** NumPy, Pandas, PySpark, Tidyverse, Scikit-learn, MLlib, Matplotlib, Seaborn, API Integration, Web Scraping, ETL Pipelines, Neo4j, Google Colab, Jupyter, Data Warehousing.
- **Cloud & Big Data Tools:** AWS (S3, RDS, Redshift, Glue, Lambda, Athena, CloudWatch, IAM), Data Lake Architecture, ETL/ELT Pipelines, Redshift Performance Tuning, AWS Glue Data Catalog
- **Data Visualization & Dashboards:** Python Dash, Plotly, R Shiny, Quarto Markdown, Tableau, Power BI, Interactive Dashboards, Web Deployment.
- **Business & Productivity Tools:** Microsoft Excel, PowerPoint, Word, Minitab.
- **Methodologies & Domain Skills:** Data Analysis, Regression Analysis, Systems Thinking, Policy Modeling, Data Storytelling, Stakeholder Engagement, Evidence-Based Decision Making, Ethical Data Handling, Strong Communication.
- **Research Publications:** [Design & Deployment of a smart chatbot using Emerging Technologies](#), July 14, 2023.
- **Conference:** Co-authored a Poster presented at the AGU Conference 2024 in Washington D.C.

PROFESSIONAL DEVELOPMENT AND LEADERSHIP

Volunteer, The Art of Living Foundation
November 2019 – Present

- Led and organized mindfulness workshops and personal development programs for 1,800+ participants—including engineering students and corporate employees—at institutions such as USC, GW, Babson College, IIT Hyderabad, and NIFT Hyderabad, promoting mental well-being, focus, and stress management.

Finance Director, GW Desis Student Organization
January 2024 – Present

- Managing the financial planning and budgeting for a 350+ member Indian graduate student community, ensuring efficient resource allocation for cultural, professional, and networking events.

Digital Marketing Director, Google Developer Student Club, The George Washington University
March 2024 – Present

- Organized and marketed GDSC GW events attended by 150+ students, facilitating workshops on Google technologies and industry-relevant skills to enhance technical learning and engagement.

EDUCATION

The George Washington University, School of Engineering & Applied Science	**Washington, DC**
Master of Science in Data Analytics	**December 2025**
Jawaharlal Nehru Technological University Hyderabad	**Hyderabad, India**
Bachelor of Technology in Computer Science and Engineering	**July 2023**