MOHAMMAD JASIM USMANI

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SUMMARY

Data Scientist/Engineer with a Master's degree and 2+ years of experience in data ingestion, cleaning, analysis, and visualization using **Python, SQL and data science libraries**. Adept at **raw data exploration** and turning domain knowledge into insights. Excellent communicator with a passion for **data quality**, self-motivated, and quick learner in fast-paced settings.

TECHNICAL EXPERTISE

- **Language:** Python, C++, SQL, MATLAB
- **Data Analysis tools:** MS Excel, Power BI
- **Database:** PostgreSQL, MySQL
- **Development Tools:** Git, Github, GitLab, Microsoft Visual Studio, PyCharm, Jupyter, Slurm, Jira, Confluence
- **Big Data Framework:** Snowflake, Matillion, **Apache Spark Ecosystem (Spark SQL, Spark Core, Spark MLlib)**
- **Deep Learning Frameworks & Library:** TensorFlow, PyTorch, NumPy, Scikit-learn, Pandas, Matplotlib, Keras, XGBoost, SciPy, Seaborn, OpenCV, Langchain.
- **Data Visualisation Tools:** Matplotlib, Seaborn, plotly, ggplot, **Streamlit**

EDUCATION

- **Master of Applied Science, ECE, Specialization in Machine Learning** 2021 - 2023
  Concordia University Montreal, QC, Canada
  Relevant Coursework: COMP 6321 **Machine Learning (Grade: A+)**,
  COEN 6331 **Neural Networks (Grade: A-)**
  Awarded 33,000 CAD stipend scholarship

- **Bachelors in Electrical Engineering, Specialization in Soft Computing** 2016 - 2020
  Jamia Millia Islamia University, India New Delhi, India

WORK EXPERIENCE

- **Data Scientist/Engineer** February 2024 -
  Precision Medicine Group Montreal, QC, Canada

  - Collaborated in building **end-to-end ETL pipelines** using **AWS, Snowflake, and Matillion** for ingesting data from APIs in type 2 SCD tables.
  - **Collaborated** with cross-functional teams to ingest data and develop a **streamlit app** for holiday calendar for employees world wide, resulting in a 30% reduction in scheduling conflict.
  - **Assisting** in developing and maintaining vector database for various AI applications.
  - **Applied advanced analytics and machine learning techniques** to solve business problems, delivering data-driven solutions in recommendation systems for sales team.

- **Machine Learning Engineer / Researcher** Jan 2022 - Dec 2023
  Aerospace Robotics Lab, Concordia University Montreal, QC, Canada
  Project: Accelerating Graph Neural Networks for Real Time Physics Simulation

  - Developed a novel algorithm and framework for training AI model using **Graph neural network** to predict rovers or vehicles escape when stuck in sand in real-time.
  - Implemented the rigid body correction for graph neural network prediction during inference which led to an accuracy of **92.7 %** to generate visualisations using matplotlib.

- Accelerated the runtime of the model by 3x (from **0.34 seconds** per frame to **0.12 seconds**) while retaining the accuracy.

- **Machine Learning Developer**   Jan 2023 - April 2023
  CRIM (Computer Research Institute of Montreal)   Montreal, QC, Canada
  Project: Object Detection in satellite images using Diffusion Models

  – Using **GPU cluster** for parallel training large diffusion models on MS COCO dataset using SHELL scripts.
  – **Fine tuning** of diffusion based object detection to improve the accuracy and generalization on satellite images.
  – Acheived **mAP of 0.89** (higher the better, between 0 and 1) for the object detection on satellite images (detection of cars, houses, trees from satellite images).

PROJECTS

- **Content-based Game Recommendation System**
  – Implemented **data preprocessing** and cleaning techniques on a diverse dataset of 10,000+ games, ensuring high-quality input for the recommendation engine.
  – Developed advanced text vectorization methods to **extract meaningful features** from game descriptions, improving recommendation accuracy by 25%.
  – Created an **interactive Streamlit dashboard** with dynamic visualizations, allowing users to explore game similarities and recommendations.

- **Legal Chatbot on Canadian Constitution using Llama 2**
  – Designed and implemented a **data pipeline to ingest, clean, and structure** constitutional data, ensuring up-to-date and accurate information for the chatbot.
  – **Legal Chatbot using Llama 2**, processing and analyzing over 500 pages of Canadian constitutional documents with 95% accuracy in legal interpretation.
  – Developed a user-friendly interface using **Streamlit**, resulting to increase user engagement and reducing legal research time for non-experts.

- **End-to-End ETL pipeline using Azure Databricks and PySpark**
  – Used sales and transaction data to create end-to-end pipeline for ingesting, transforming and loading the data.
  – Applying business logic on data for the transformation layer to load data into PowerBI.
  – Technologies used: **Azure Databricks, PySpark, AWS**.

RESEARCH PUBLICATIONS

- Mohammad Jasim Usmani and Krzysztof Skonieczny, "Accelerating Graph Networks for Real Time Physics Simulation", *6th European-African Regional Conference of the ISTVS*, Lublin, Poland, October 2023, 2023.

- Mohammad Jasim Usmani and Ahteshamul Haque, "Power Management of Solar PV Systems for PEER Load," *IEEE Transactions on Industry Applications*, Volume: 57, Issue: 6, 2021. **Impact Factor: 4.4**

- Mohammad Jasim Usmani and Ahteshamul Haque, "Power Management of Solar PV Systems for PEER Load," *International conference on Power Electronics, Smart Grid and Renewable Energy, Kerala, India, 2020.*

- Mohammad Jasim Usmani, Ahteshamul Haque, V S Bharath Kurukuru, Mohammed Ali Khan "Power Management for Hybrid Energy Storage System in Electric Vehicles," *International Conference on Power Electronics, Control and Automation, New-Delhi, India, 2020.*