PARAMPREET SINGH

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Data Enthusiast with expertise in Machine Learning, GenAI, and Data Analytics, committed to developing AI-driven solutions that enhance business efficiency and decision-making, with a proven ability to quickly adapt and deliver impactful results.

PROFESSIONAL EXPERIENCE

Department of Materials Science and Engineering, Clemson University — **South Carolina, United States**
Research Assistant — ***Jan 2024 – Aug 2024***

Project 1: *Crystal-Graph CNN (CGCNN) and Generative Modeling*

- Boosted predictive accuracy of vacancy enthalpies by 15% by using a modified CGCNN, resulting in an R^2 score of 0.85+.
- Accelerated DFT-relaxed crystal structure prediction and cut computational costs by 7x by developing a deep learning model using Graph Convolutional Networks (GCNs) and Generative Adversarial Networks (GANs).
- Optimized data processing by designing a data pipeline in PyTorch, enabling efficient handling of variable-sized graph data.

Project 2: *AI Knowledge Agent for Material Science Data Retrieval*

- Streamlined research workflows by building a multi-source AI knowledge agent that intelligently routes and retrieves scientific research data between a Chroma DB and various online sources.
- Enhanced data retrieval and response accuracy by developing a custom vector-based search engine using LangGraph.

Clemson University, CUICAR Campus — **South Carolina, United States**
IT Consultant (Graduate Assistantship) — ***Oct 2022 – Dec 2023***

- Reduced unexpected IT asset downtime by 25% by building a predictive maintenance model using Azure Machine Learning with KNN, Random Forest, and XGBoost.
- Preprocessed large-scale historical IT asset data through an ETL pipeline using Azure Databricks, Synapse Analytics, and PySpark, ensuring efficient data readiness for analysis.
- Increased operational efficiency by designing a Power BI dashboard visualizing maintenance insights and schedules.
- Accelerated ticket resolution time by 20% developing a GenAI-powered IT assistant chatbot using Azure Functions, Azure Cognitive Search, and Azure OpenAI with RAG pattern for intelligent data retrieval.

Maruti Suzuki India Ltd — **Gurugram, India**
Assistant Manager, Product Research and Development — ***July 2020 – July 2022***

- Increased market penetration confidence by 30% by optimizing the product concept for the 4th Gen Dzire ($140MM project) through data-driven analysis of vehicle sales trends using Salesforce CRM and NCBS datasets.
- Boosted profit margins by 13.33% by devising a variant strategy based on advanced sales analytics and customer segmentation, optimizing the product mix for maximum profitability.
- Enabled strategic data-driven decisions by developing Power BI dashboards visualizing KPIs for senior management.

Mahindra Research Valley — **Chennai, India**
Research Intern, Vehicle Energy Management — ***Jan 2019 – May 2019***

- Attained a 92% R2 score, forecasting axle power loss split, using predictive analytics & mathematical modeling in MS Excel.
- Proposed design improvements, reducing rear axle power loss by 3%, and published the findings in SAE International. [>]

PROJECTS

- **ResumeRAG:** Developed an AI-powered resume generator using LangChain, Chroma, and RAG, leveraging hybrid search to enable fast, efficient, and personalized query-based resume interactions.
- **LSTM Attention:** Achieved a 60% reduction in SoftMax loss by implementing an LSTM with Attention model, significantly outperforming standard models without attention and improving caption accuracy on the COCO data.

SKILLS AND CERTIFICATIONS

- **Tools:** SQL, Python, R, Azure (Databricks, Synapse, Data Factory), AWS, Spark, Power BI, MS Office, Git
- **Modeling:** Machine Learning, Deep Learning, NLP, Generative AI, Predictive Modeling, Transfer Learning, Feature Engineering, Data Pipelines, ETL, Data Warehousing, Data Storage Solutions
- **AWS Certified Machine Learning Specialty:** Demonstrated expertise in building and training machine learning models on AWS using services like Sagemaker, Redshift, S3, Kinesis, Glue, and Lambda for scalable, production-level solutions.

EDUCATION

Clemson University — **South Carolina, United States**
Master's in Computer Science, CGPA – 3.9/4.0 — ***Aug 2022 – Aug 2024***
Coursework: Statistics, Data Mining, Analytics, Data Science, Advance Machine Learning, Deep Learning for Computer Vision

Punjab Engineering College (Deemed to be University) — **Chandigarh, India**
B.Tech, Mechanical Engineering, CGPA – 8.2/10 — ***Aug 2016 – June 2020***