Ashish Agarwal
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SUMMARY

Data science professional with expertise in building scalable data pipelines, deploying machine learning models in production, and managing cloud-based infrastructure. Proficient in Python, AWS, Docker, Kubernetes, and deep learning frameworks. Experienced in ETL/ELT processes, MLOps practices, and leveraging LLMs for data-driven solutions. Strong background in statistical analysis, machine learning, and cloud-native technologies with a passion for optimizing workflows and enhancing operational efficiency.

EDUCATION

Master of Science, Data Science (**University of New Haven**) GPA: 4.0 [West Haven, CT :- Aug 2023 – Expected Dec 2024]
Bachelor's in computer engineering (**Institute of Engineering**) GPA: 3.2 [Pulchowk, Lalitpur, Nepal :- Nov 2016 – Sep 2021]

RELATED EXPERIENCE

Data Engineer Intern (**North East Scientific**) [Waterbury, CT :- June 2024 – Aug 2024]

- Led the development of ETL pipelines using MasterControl and Netsuite APIs, automating data extraction, transformation, and storage in MySQL, reducing external dependencies by 30%.
- Developed dashboards and reports for Inventory, Sales and Production insights using QLIK Sense Cloud.
- Designed a Retrieval-Augmented Generation (RAG) system for document processing, improving knowledge retrieval efficiency by 50% and streamlining employee training.

Graduate Research Assistant (**Secure and Assured Intelligent Learning Lab**) [West Haven, CT :- March 2024 – Present]

- Engineered multi-tenant GPU environments for brain-computer interface (BCI) research using Docker and Kubernetes, improving computational resource allocation by 40%.
- Applied advanced statistical techniques (wavelet transforms, ICA, SVM) for EEG signal processing and classification, enhancing model accuracy by 20%.
- Automated workflows for data management, web development, and deployment with Datalore and WordPress.
- Guided students in developing and refining their capstone projects, focusing on innovative applications of machine learning and data science.

Data Engineer (**University of New Haven**) [West Haven, CT :- Oct 2023 – Present]

- Developed and optimized ETL/ELT pipelines on AWS (Lambda, EC2, S3, Redshift), improving data integration performance by 25%.
- Implemented OCR for feature extraction from image data and fine-tuned deep learning models using Hugging Face transformers, reducing model inference time by 15%.
- Collaborated with stakeholders to develop Power BI dashboards, delivering actionable insights to senior management

Associate Software Engineer (**LIS Yomari**) [Lalitpur, Nepal :- April 2021 – May 2022]

- Migrated on-premises data warehouses to AWS, implementing secure data transfer and scalable ETL pipelines using Apache Spark, Kafka, and AWS services (Batch, Lambda, Kinesis).
- Enhanced data models with star/snowflake schemas, boosting query performance by 30%.
- Developed MicroStrategy dashboards and automated reporting, reducing report generation time by 40%.

Data Science Intern (**Tootle**) [Lalitpur, Nepal :- Jan 2021 – March 2021]

- Developed customer segmentation models using LRFM algorithms, identifying high-value user segments and increasing customer retention by 10%.
- Built real-time dashboards for data visualization using MongoDB, Django, and Python, improving decision-making efficiency.

RELEVANT PROJECTS

Multi-Tenant GPU Cluster West Haven, CT
Secure and Assured Intelligent Learning Lab Sep 2024 – Present

- Built a Kubernetes-based GPU cluster with JupyterHub integration, enabling multi-user access and efficient GPU resource sharing.
- Configured multi-tenant resource profiles using Kubernetes and Helm, supporting customized resource allocations, which improved utilization by 30%.
- Developed a secure access framework through Kubernetes Dashboard and JupyterHub authentication, ensuring isolated and reliable user access.

- Authored detailed documentation covering setup, deployment, troubleshooting, and maintenance steps, streamlining cluster management for research and high-compute workloads..

RAG-based Knowledge Management System for Training and Information Retrieval Waterbury, CT
North East Scientific June 2024 – Aug 2024

- Developed a Retrieval-Augmented Generation (RAG) system by scraping and cleaning data from the company's website and specification documents, converting them into markdown format.
- Built a Chroma database incorporating LLM models such as Llama3, Phi3, and Qwen2 with quantization techniques to optimize GPU usage.
- Employed advanced prompt engineering to ensure accurate, non-hallucinated responses by reranking documents and interfacing with the database.
- Designed a user-friendly web interface, similar to ChatGPT or OpenWebUI, enabling user context tracking and delivering reliable, query-specific responses for training and operational purposes.

Retail Sales Inventory and Traffic ETL and Reporting Lalitpur, Nepal
LIS Yomari [Client- Ralph Lauren] July 2021 – March 2022

- Architected a robust ETL/ELT pipeline on AWS, ingesting data from TrueVUE APIs, S3 buckets, GCP, and FTP servers, leveraging EC2, EMR, Kinesis, Glue, Lambda, S3, Airflow, Redshift, CloudWatch, CloudFormation, and IAM.
- Orchestrated workflows using AWS (EC2, EMR, Lambda, Airflow) and implemented automated monitoring with CloudWatch, ensuring 99.9% uptime.
- Developed metadata objects, metrics, and attributes based on specifications in MicroStrategy, conducted data validation and performance testing, designed dashboards and dossiers tailored to client requirements.

TECHNICAL SKILLS

Languages & Tools: Python, SQL, NoSQL, R, TensorFlow, Scikit-Learn, Hugging Face, Docker, Kubernetes, Git, Bash, Linux, Dask, Polars
Cloud & DevOps: AWS (Lambda, S3, EC2, Redshift, Kinesis), Azure, Kafka, Airflow, Jenkins, GitHub Actions, Terraform
Data Engineering & MLOps: ETL/ELT Pipelines, CI/CD, Spark, Data Lakes, CloudFormation, Helm, MLflow, OCR
Visualization Tools: Power BI, QLIK, Tableau, MicroStrategy
Machine Learning: Supervised Learning, Unsupervised Learning, Reinforcement Learning, Deep Learning, Hyperparameter Tuning

EXTRACURRICULAR ACTIVITIES

Helping Hands Nepal, HENN Kathmandu, Nepal
Volunteer and Technical Supervisor May 2017 – July 2019

- Led technical initiatives to implement Linux-based educational systems in remote schools, providing resources for underprivileged students.
- Developed locally hosted educational materials in Nepali, improving access to learning resources in remote regions.