

ASHMIT P BHARDWAJ



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WORK EXPERIENCE

Graduate Researcher

Buffalo, NY

State University of New York Research Foundation

August 2023 - Present

- Awarded **Department of Homeland Security** grant to develop a **personalized LLM** with **retrieval-augmented generation** and **prompt-engineered gating**, fine-tuned for **security-clearance tiers**, using embeddings and **policy-based access** control to deliver classified document **retrieval** with differential **privacy**.

Machine Learning Engineer II

Pune, India

Renishaw PLC

July 2021 - July 2023

- Pioneered no-code AI platform with **LLM** assistance for automated dataset annotation and **active learning** model refinement, utilizing **YOLOv8**, **EfficientDet**, and **Faster R-CNN** with **Optuna** hyperparameter tuning. Built with **React**, **FastAPI**, and **PostgreSQL**, deploying models on **AWS Lambda**, **SageMaker**, and Edge TPU.
- Engineered containerized computer vision microservices using **PyTorch** object detection, **U-Net segmentation**, and **TensorRT** optimization on **AWS ECS** with **Redis** and **DynamoDB**, achieving 99.2% detection accuracy and reducing inspection time from 10 minutes to 45 seconds.

AI Researcher

Pune, India

Symbiosis Centre of Applied Artificial Intelligence

July 2020 - June 2021

- Developed **multimodal** stress detection **models** using **TensorFlow**, leveraging **GNNs**, **Bi-LSTMs**, and **transformer** architectures; **Published** "Employing multimodal machine learning for stress detection." in **JHE-IEEE**

Machine Learning Engineer Intern

Pune, India

Blue Bricks Technologies

December 2019 - June 2020

- Spearheaded **BERT**-based social media profiling pipelines with **Python** and **SQL**, storing user embeddings in **BigQuery** for **user personalization modeling** and **recommendation system**, containerized via **Docker**.
- Implemented end-to-end **sentiment analysis** using **scikit-learn** and **TensorFlow** ensembles, orchestrated via **Apache Airflow**, and visualized insights through **A/B testing** and dashboard analytics, boosting retention by 60%.

PROJECTS

Browser-Aided RAG | Large Language Model, Vector Databases, Retrieval Augmented Generation

- Engineered **RAG** chatbot using **LangChain**, **Python** on **Kubernetes** Engine, indexing sitemaps into **BigQuery**, managed via **Terraform**; optimized using **DPO** and **PPO**; automated CI/CD with **Git** and **Docker**.

DubAI – Video-to-Video Language Translation and Lip-Sync Generation | Generative AI Agents, SST, TTS

- Architected an agentic AI **Typescript** solution for real-time dubbing and lip synchronization of multilingual content. Implemented using **Model Context Protocol**, achieving **95% accuracy** in synchronization.

EDUCATION

University at Buffalo, The State University of New York

August 2023 – June 2025

MS Data Analytics and Engineering

CGPA - 3.9/4.0

Symbiosis International University

July 2017 - June 2021

BTech Information Technology

CGPA - 3.67/4.0

TECHNICAL SKILLS

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|--------------------|---------------------------------|----------------------------------|
| • Python | • SQL/PostgreSQL | • Retrieval-Augmented Generation |
| • Git/VCS | • Docker | • Prompting |
| • MLOps | • AWS (S3, SageMaker, Redshift) | • Large Language Models |
| • ETL / Airflow | • PyTorch | • Explainability |
| • Kubernetes / ECS | • TensorFlow / ONNX | • Agentic AI |
| • Data modeling | • Java / C++ | • Embeddings |