

Rahul Singh

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Education

Program	Institution	%/CGPA	Year
B.Tech. (Engineering Physics)	Indian Institute of Technology Delhi	8.433/10	2018-22

Core Skills

- Machine Learning and Deep Learning: Expertise in neural networks (CNNs, RNNs, LSTMs), supervised, unsupervised learning, and architectures like BERT and GPT.
- Computer Vision and NLP: Skills in image classification, object detection, text processing, sentiment analysis using TensorFlow, PyTorch, and OpenCV.
- Data Science and Modeling: Proficiency in predictive modeling, cross-validation, and optimization using Python libraries (Scikit-learn, Pandas, Numpy).
- Programming and Deployment: Adept in Python with TensorFlow, Keras, PyTorch; experienced in cloud deployment (Azure) and Rest API development (FastAPI, Flask).
- MLOps Proficiency: Extensive experience in evaluating and integrating MLOps tools (ClearML, Determined AI, Dataiku) for end-to-end machine learning lifecycle management, including model training, deployment, and infrastructure optimization.

Work Experience

Software Engineer
Boeing India Pvt. Ltd

July 2022 - Present
Bangalore

Computer Vision

- Engineered an advanced PDF Parser leveraging OpenCV, Tesseract, PaddleOCR, Layout Parser, and PDFMiner.six to extract critical data, contributing to a database that trains LLM for Boeing's specific business needs.

NLP

- Pioneered the finetuning of quantized BLOOM and other open-source LLMs for high-precision, on-premises business solutions.
- Authored feature grammar files using Second Order Propositional Logic with Natural Language Toolkit (NLTK), enhancing Automated Theorem Prover capabilities.
- Designed and implemented Text Summarization and Keyword Extraction modules utilizing Transformers.
- Developed and scaled RESTful APIs for Keyword Extraction and Text Summarization in the FastAPI framework.

Database and Cloud

- Constructed a PostgreSQL database within Docker; engineered scalable REST APIs for database interactions via FastAPI.
- Conducted exploratory tests on Azure cloud services, focusing on Azure Speech for video and audio transcription.

MLOps

- Tool Evaluation and Integration: Proficient in assessing and integrating end-to-end MLOps platforms including ClearML, Determined AI, and Dataiku. Conducted extensive evaluations focusing on ML model training efficiency, GPU utilization, and model registry capabilities.
- Deployment and Scalability: Experienced in deploying scalable machine learning models with robust support for cloud platforms (Azure, GCP) and data versioning tools (Git LFS, S3). Ensured high availability and fault tolerance in production environments.
- Infrastructure and Collaboration: Skilled in setting up and managing MLOps infrastructure, ensuring seamless backend integration and efficient resource management. Enhanced team collaboration through role-based access control and comprehensive UI/UX in MLOps tools.

- Automation Initiatives**.....
- Created an automation module for email client integration, enabling proactive communication algorithms by interpreting emails and attachments.
 - Contributed significantly to an end-to-end automation tool, achieving a 288x reduction in average query time in production processes **(From 24 hrs to less than 5 minutes)**

- Inventions and Patents**
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- Led a team of four in developing a Deep Learning-based Documentation Assistance Tool; presented research at Boeing conferences and filed for patent.
 - Contributed to the invention of a Cabin Space Optimization Tool for Boeing commercial airplanes; patent filed.

- Certifications**
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- **AZ-900:** *Azure fundamentals* (Dec 2022)
 - **AI-900:** *Azure AI fundamentals* (Jan 2023)

- Extra-Curriculars**
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|--|---------------------------|
| Volunteer
(BloodConnect) | Dec
2019 |
| ○ Volunteered at BloodConnect, organizing blood donation camps and managing emergency helplines. | |