Sparsh Nagpal

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Education

- **University of Washington** — Seattle, WA, USA
  Master of Science - Data Science; GPA: 3.7 — *Sep. 2023 - Mar. 2025 (Expected)*
- **University of Mumbai** — Mumbai, MH, India
  Bachelor of Engineering - Computer Engineering; GPA: 3.73 — *Aug. 2018 - Aug. 2022*

Skills Summary

- **Languages**: Python (Advanced), R, SQL, Java, JavaScript, HTML, CSS
- **Frameworks**: Scikit, NLTK, SpaCy, TensorFlow, Flask, PyTorch, Keras, OpenCV, Hugging Face Transformers, FastAPI
- **Operations & DB**: Docker, Tableau, GIT, SQL, Hadoop, MongoDB (NoSQL), Spark, PostgreSQL, VectorDB, Kubernetes, Spark
- **Machine Learning**: LLMs, ML Models, NLP, Computer Vision, Diffusion Models, GANs, Recommendation Systems

Experience

- **The Boeing Company** — USA
  Data Scientist 2 — *Sep. 2024 - Present*
  - **Chatbot API Integration**: Integrating access-based data extraction Chatbot APIs for the user interaction.
  - **Multi-Database Integration**: Built a custom Python pipeline for a single query operation over SAP HANA DB and MySQL
- *Data Analytics and IT Intern* — *Jun. 2024 - Sep. 2024*
  - **RAG Chatbot Development**: Developed a RAG-based chatbot using Langchain library incorporating web-scraping and automation for accessing Boeing web data through prompts
  - **LLM-based Supply Database Ops**: Integrated a custom LLM-based SQL database operations feature in the chatbot
  - **API Development**: Developed end-to-end production APIs and reduced the avg load time from 4mins to under 0.01s.
  - **Hackathon Winning Project**: Won the Boeing Hackathon 2024 for developing an NLP-based solution with 98% accuracy (a 2x improvement), significantly enhancing data quality using LLMs.
  - **Accomplishments**: Awarded as one of the Top 100 interns across the US in 2024 by Wayup and Yello
- **Flavor AI** — India
  AI Engineer (Contractual) — *Jun. 2023 - Sep. 2023*
  - **Enhanced Image Generation Model**: Enhanced image generation quality by 50% for product background replacement using Computer Vision techniques such as LoRa and ControlNets.
  - **API Development**: Developed APIs using Python, Flask, AWS & S3 with Postman, improving response time by 40%
  - **Product Roadmap**: Prepared a product road-map & MVP with the founders, leading to positive stakeholder feedback.
- **AppyHigh Technology** — India
  Machine Learning Engineer — *Sep. 2022 - Jun. 2023*
  - **AI Avatar Generation**: Engineered and managed a Face Avatar Generation AI app built using Python, Diffusion models, and NoSQL MongoDB, achieving a top Play Store ranking with over 1,000 daily active users and an average ticket size of $12.
  - **Fine-tuning Image Model**: Fine-tuned a Diffusion Image Generative Model within a Stable Diffusion pipeline for enhanced product background generation, incorporating image-to-text models to establish an inverse prompting infrastructure
  - **Image Classification**: Designed an image rejection (classification) pipeline with Yolo v5, having an accuracy of 92%.
- *Machine Learning Intern* — *Mar. 2022 - Sep. 2022*
  - **SDK Integration Optimization**: Managed and optimized end-to-end content aggregator SDK in 15+ mobile apps, improving API performances by approximately 35% over time. It boosted daily active users from 2m to 3.5m and improved the CTR.
  - **Dynamic Dashboards**: Constructed dynamic performance dashboards with 25+ analytical representations using SQL and NoSQL (MongoDB) databases that had data across 15 collections, handling over 50m documents in total.
  - **Cold-Start Recommendation Solution**: Devised a a novel recommendation cold-start algorithm using trend APIs, transformer-based similarity, and normalization techniques. which increased new user engagement by over 30%.
- **Friends for Inclusion** — India
  Machine Learning Engineer Intern — *Mar. 2021 - Mar. 2022*
  - **Sign Language Translation:**: Developed India's first Grammar-based Text-to-Indian Sign Language (ISL) translation application, achieving 97% user understanding.
  - **Backend Development**: Led the app's backend development, ML deployment, and tested over DynamoDB & AWS Lambda
  - **Conference Presentation**: Published the research at the Microsoft-backed IIIT-B Empower Conference.
  - **Provided Mentorship**: Mentored a team of four Machine Learning interns, guiding them toward their project completion.

Projects

NetApp (Capstone)
- Devising upon ML-Powered Ransomware Detection

Meta Engagement Analysis Paper Link *(R, Python, Statistical Analysis, Hypothesis Testing)*
- Conducted comprehensive statistical analysis on Instagram engagement using R and Python through hypothesis testing

Slogan Fine-tuning and Post Generator Github Link *(Fine-tuning Mistral-7B LLM, Stable Diffusion)*
- Generated ad slogans, fine-tuning Mistral-7B LLM with PeFT QLora over 10k+ slogans & images using diffusion.

Sales Dashboard Dashboard Link *(Tableau)*
- Developed a highly dynamic Sales dashboard over an open-source database using the Tableau Desktop tool.

Music Genre Classification Github Link *(Logistic Regression, XGBoost, Random Forest, AdaBoost, CatBoost, GBM, KNN)*
- Conducted a comparative analysis of seven ML models for music genre classification & evaluated performance