

Sarthak Singh

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Schedule a Call

PROFESSIONAL SUMMARY

4+ years of AI/ML software development experience specializing in Large Language Model fine-tuning, NLP, and AI-driven automation across InsurTech, healthcare, and EdTech sectors. Skilled in building and deploying scalable AI solutions, including LLM-based systems, RAG frameworks, and document processing applications.

Proficient in leveraging cutting-edge research and machine learning techniques to solve complex business problems, optimize workflows, and drive data-driven decision-making. Experienced in translating business requirements into AI-powered solutions that enhance efficiency, automate operations, and unlock new opportunities.

EDUCATION

• Universität Stuttgart

Stuttgart, Germany

M.Sc. Computational Linguistics

October. 2023 – Present

- Courses: Introduction to Deep Learning, Advanced Deep Learning, Reinforcement Learning, Knowledge Graphs, Foundation Models, Machine Perception and Learning, Speech Technology, Machine Learning, Modelling Semantic Plausability
- Cumulative GPA - 1.1

• Guru Gobind Singh Indraprastha University

New Delhi, India

B.Tech. Computer Science and Engineering

July. 2015 – June. 2019

- Courses: Machine Learning, Artificial Intelligence, Applied Linear Algebra, Data Structures & Algorithms

SKILLS SUMMARY

- **Languages:** Python, C, SQL, Unix & Shell Scripting, Latex, JavaScript
- **Tools:** Numpy, Pandas, PyTorch, Transformers, Langchain, Scikit-Learn, Matplotlib, XGBoost, OpenCV, Huggingface, Git, Pytest, NLTK, SpaCy, Flask, Kubernetes, Docker, GIT, Airflow, AWS, GCP, MLC, TVM, Distilable, Django, PostgreSQL
- **MLOPs:** Airbyte, Great Expectations, Weights & Biases, MLFlow, DVC, Sagemaker, Lambda, ECR, ECS, Docker, FastAPI, Streamlit, Gradio, AirFlow, ONNX Runtime, AutoGEN, Deepspeed, Megatron LM, VLLM, Tailscale, Podman, KubeFlow, Kafka, Apache, Unicorn
- **Technical Skills:** Large Language Modelling and Pre-training, Supervised Fine Tuning, DPO, PPO, Deep Learning, Machine Learning, Deep Learning, Natural Language Processing, Model Deployment, Model APIs, Multi Node Training
- **Soft Skills:** Leadershop, Planning and Management, Writing, Extempore, Time Management

EXPERIENCE

• University of Stuttgart - Institut für Maschinelle Sprachverarbeitung

Stuttgart, Germany

Teaching Assistant - Introduction to Deep Learning

January 2025 - Present

- **PyTorch & Neural Networks:** Conducted tutorials on PyTorch fundamentals, covering preprocessing, datasets, data loaders, and training neural networks (**CNNs, RNNs, Transformers**).
- **Transformers & NLP:** Taught students how to use the Hugging Face Transformers library for tasks like **token classification, sentiment analysis, and text generation** using decoder-only models.
- **Exercises & Exam Preparation:** Designed and presented weekly exercises and solutions. Created a questionnaire with PyTorch-based questions to help students prepare for exams.
- **Live Coding & Final Project:** Held **live coding sessions** to assist students with their final project, where they trained models to solve real-world tasks.

• University of Stuttgart - SimTech

Stuttgart, Germany

Student Assistant - Human Motion Forecasting

November 2024 - Present

- **Human Motion Prediction:** Worked on predicting human motion using **3D data** from AR-VR devices like **HOT3D**, leveraging methods such as HOIMotion.
- **Intent & User Classification:** Analyzed **eye-gaze data** using **DenseNets** to predict user intent and classify users based on their motion patterns.
- **Pose Estimation & GCNs:** Developed models for **joint position prediction** using motion and gaze data, employing **Pose Residual GCN** and **Fusion GCN** architectures.

• Fraunhofer-Gesellschaft

Stuttgart, Germany

June 2024 - September 2024

Working Student - Generative AI

- **LLM Evaluation:** Researched state-of-the-art LLM evaluation benchmarks and implemented **MMLU Pro** and **MultiWOZ** for in-house model assessment.
- **Retrieval-Augmented Generation:** Contributed to the development of Fraunhofer's in-house RAG framework, RAGit, optimizing retrieval-based LLM performance.

• Gigaforce Private Limited

Noida, India

October 2022 - September 2023

Senior Software Engineer - AI/ML

- **SubroGPT:** Designed and curated a Custom Dataset using **Falcon 40B** for Subrogation Domain. **Instruct fine-tuned** an open source LLM with 7B parameters using **PEFT** and **LoRA** to perform **transfer learning**. Applied it to several downstream tasks like **email generation, chain of thought answering, and context understanding**.
- **QA Retrieval Agent:** Engineered a robust QA Retrieval agent by leveraging **Langchain, FastChat5B, and ChromaDB Vector Store**. Analyzed accident descriptions and traffic laws to identify law infringements, streamlining liability determination alongside SubroGPT. Increased claim closure rate by 500%.
- **Data Extraction from Police Report:** Utilized **OpenCV** and **Tesseract** to identify and extract structured data from Police Reports. This automated data extraction resulted in a decrease of claim processing time by 1 hour/report.
- **Subro Potential Application:** Created a production-ready application that could successfully analyze a claim and determine its subrogation potential. Used **TFidf, NER, BERT Embeddings and sentence similarity** to understand the data, gather features and trained on historical data. **Reduced the claim processing time from 100 claims/day to 10,000 claims/hour while increasing per claim revenue by 40%**. Used **Dockers** to deploy the application and **Airflow** for scheduling and monitoring. Daily processing 1M+ documents to predict subrogation potential
- **AI Enabled Claim Document Parser:** Developed an Algorithm to identify patterns and extract data from an unseen pdf while maintaining its structure. Went from POC to deployment in 1 month. This allowed streamlined text extraction resulting in significant time reduction and huge savings for clients. 250K+ documents processed till date
- **Impact:** Successfully took several AI/ML projects from proof-of-concept to production. Developed and applied advanced algorithms in the domain of **subrogation opportunity identification, liability analysis, and text extraction** leading to increased subrogation efficiency and revenue for clients. Identified need for Airflow, **WandB** incorporation, set up and managed airflow and WandB to automate, schedule, monitor, and debug AI applications and artifacts

• Navia Life Care

Gurgaon, India

August 2019 - September 2022

Machine Learning Engineer

- **Handwriting Annotation and Recognition System:** Built an end-to-end system for collecting and labeling doctor's handwritten prescriptions, Leveraged collected data to enhance **handwriting and character recognition on doctor's prescriptions** through the utilization of **CNN, RNN, and CTC techniques** achieving a **90% accuracy rate in offline recognition**
- **Clinical Decision Support System:** Implemented personalized **recommendation engine** for 20k+ doctors based on patient's information, symptom details and usage data
- **ETL Pipelines and Reporting System:** Led the development of an ETL pipeline using PostgreSQL and Django, in conjunction with a reporting system featuring HTML, CSS, and JavaScript visualizations. Automated data pipelines and reporting for extensive doctor and patient records, alongside the development of APIs for seamless integration.

PUBLICATIONS & PRESENTATIONS

S. Singh

Stuttgart, Germany

Poster Presentation: Immersive text-to-speech systems

[Current Topics in Speech Technology, IMS], February, 2025

- Portfolio: Click to view more details

S. Singh

Stuttgart, Germany

Poster Presentation: Direct Preference Optimization (DPO)

[Research Seminar, IMS], January, 2025

- Portfolio: Click to view more details

S. Singh

Stuttgart, Germany

Poster Presentation: Prompt Tuning for QA

[Advanced Deep Learning, IMS], June, 2024

- Portfolio: Click to view more details

ACHIEVEMENTS

- Kaggle Expert
- Achieved top 40 ranking out of 6000 students in the ZS Data Science Challenge 2018.