

Suraj Jaiswal

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Education

Degree	Institution	CPI	Year
MTech (CSE)	Indian Institute of Technology Gandhinagar (IIT Gn)	8.5	2022 – 2024
BTech (CSE)	G.H. Patel College of Engineering and Technology, GTU	8.8	2018 – 2022

Experience

- **Machine Learning Engineer, [NeuroReef Labs](#)**, Bangalore · Full-time [Jun 2024 - Present]
 - Developed product CareCortex (link: [carecortex.ai](#)): AI copilot for medical notetaking of Doctor-Patient conversation
 - **Fine-tuned large language models (LLMs)**: on medical guidelines and medical codes to generate outputs for healthcare
 - **Medical Code Automation**: Developed a system that captures Doctor-Patient conversations to generate accurate ICD-10, CPT, SNOMED, and HCC codes using embedding-based similarity search and retrieval-augmented generation ([RAG](#))
 - Interactive **Medical Chatbot**: Leveraged [HyDE](#) + RAG for real-time insights on patient chart details
 - Prompt Tuning: Aligned LLM outputs with medical guidelines using few-shot tuning for clinically accurate responses
 - Wrote SQL queries for PostgreSQL and managed security tasks using AWS services(S3, ECR, EC2)
 - Stack: Langchain, RAG, FastAPI, Docker, AWS, LLM finetuning, Asyncio
- **Machine Learning Intern, [NeuroReef Labs](#)** · Remote [Dec 2023 - May 2024]
 - Created, coded, and optimized **backend ML pipeline** for product **Medaura** (link:[medaura.ai](#)): Medical Q&A
 - Utilized HyDE + RAG using PubMed database to get answers using medical data
- **Teaching Assistant, IIT Gandhinagar** [Jun 2022 - Jun 2024]
 - **Natural Language Processing** (Prof. Mayank Singh) and **Machine Learning** (Prof. Nipun Batra): Assisted the professor in evaluating papers, assignments, viva, and quizzes
 - **Probability, Statistics, and Data Visualization** (Prof. Shanmuganathan) and **Computing** (Prof. Nipun Batra): Conducted hands-on lab sessions to instruct over 20+ students on probability distributions and fundamental ML concepts. Developed programming questions for over 300 students and provided Python tutorials to 20+ students

Research Publications

- **Eye in the Sky Detection and Compliance Monitoring of Brick** [Jan 2024 - Jun 2024]
 - Paper **accepted** in **ACM Compass** (Conference on Computing and Sustainable Societies) 2024
 - **Live demo**: [brick-kilns-detector.streamlit.app](#) of **Brick kiln detector application** enabling real-time brick kiln detection
 - Developed a scalable **YOLOv8** model for satellite detection, **identifying 19,579 brick kilns** across nine Indo-Gangetic states
 - **Automated compliance monitoring of environmental policies** impacting public health, assessing the proximity of kilns to human habitats, rivers, and hospitals utilizing **Google Maps Static API** and **Sentinel API** for satellite data
- **Towards Scalable Identification of Brick Kilns from Satellite Imagery with Active Learning** [July 2023 - Dec 2023]
GitHub repo: [github.com/jaiswalsuraj487/brick-kiln-repo](#)
 - **Paper accepted** and in nomination for **best paper award** in **NeurIPS 2023** on ReALML
 - Developed an efficient method for detecting brick kilns in satellite images using active learning techniques, **achieving 97% of oracle F1 score (0.976)** with a **70% reduction in manual annotation requirements**
 - Implemented in **Docker** container to ensure reproducibility, streamlined development and to use GPU on sever
 - **Identified 700+ new brick kilns** in the Indo-Gangetic region, supporting global emissions monitoring and policy regulation

Achievements

- **1st Prize** among 70+ teams - **Third AI India Hackathon**. Worked on **Neural DB** engine to search queries on **Google Drive**
- Achieved all India 3000 rank in the Graduate Aptitude Test in Engineering in 2021

Projects

- **Meta-Learning: Hyper-Networks and Neural** (Blog: [link](#)) [Nov 2023]
 - Meta-learning to learn task-specific networks to reconstruct whole given few context points of celebrity face image
- **Image to image for Climate Modelling using Auto-Encoder** (Blog: [link](#)) [Oct 2023]
 - Implemented Convolutional and UNet Auto-Encoder for multichannel input and output to predict pollution level in Delhi
- **The Third AI Engine Hackathon for Google Drive, ThirdAI Corp** (GitHub: [link](#)) [Aug 2023]
 - **Developed a localized drive search engine** for **retrieving** confidential file information within a person's Google Drive
 - Leveraged Third AI's extremely efficient NLP-based **NeuralDB** architecture that significantly **enhances user accessibility**
- **Enhancing Images with GAN-based Super Resolution**(Blog: [link](#)) [May 2023]
 - Implemented generative adversarial network to improve image quality using CNN with residual connections
- **Cryptocurrency Analysis & Trading Bot** (GitHub: [link](#)) [Jan 2022 – April 2022]
 - Built an **AI bot** using Praw and the Reddit API to **fetch subreddit posts** and perform **sentiment analysis** on the data
 - **Enabled the bot to trade** specific **cryptocurrencies** using Binance API **based on technical indicators**, primarily using the RSI from the technical analysis library, and **integrated sentiment analysis into its trading decisions**.

Technical Skills

- **Languages:** Python, C, MySQL, Latex
- **Technologies:** Langchain, FastAPI, Tensorflow, Pytorch, JAX, Raytune, Sciki-learn, Numpy, Pandas, Matplotlib
- **Tools:** AWS, Hugging Face, Streamlit, Docker, Git, Visual Studio code, Excel, Notion, Jira