| Suraj Jaiswal  ML Engineer, Neuroreef Labs  Masters in Computer Science and Engineering, IIT Gandhinagar | jaiswalsuraj@iitgn.ac.in  +91 7878189018, [LinkedIn](https://www.linkedin.com/in/suraj-jaiswal-3494261b6/)  [jaiswalsuraj487.github.io](http://jaiswalsuraj487.github.io) |
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Education

| Degree | Institution | CPI | Year |
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| 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](https://www.linkedin.com/company/neuroreef-labs/), Banglore · Full-time | [Jun 2024 - Present] |
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| * Developed product CareCortex (link: [carecortex.ai](http://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](https://arxiv.org/abs/2005.11401)) * Interactive Medical Chatbot: Leveraged [HyDE](https://arxiv.org/abs/2212.10496) + 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](https://www.linkedin.com/company/neuroreef-labs/) · Remote | [Dec 2023 - May 2024] |
| * Created, coded, and optimized backend ML pipeline for product Medaura (link:[medaura.ai](http://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] |
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| * Paper accepted in ACM Compass (Conference on Computing and Sustainable Societies) 2024 * Live demo: [brick-kilns-detector.streamlit.app](https://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 GitHub repo: github.com/jaiswalsuraj487/brick-kiln-repo | [July 2023 - Dec 2023] |
| * [Paper](https://openreview.net/forum?id=F6jSo0PIKy&noteId=nANTCsdDde) 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 |
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Projects

| * **Meta-Learning: Hyper-Networks and Neural** (Blog: [link](http://jaiswalsuraj487.github.io/publications_and_projects/data/Hypernet_neural_process.html)) | [Nov 2023] |
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| * 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](http://jaiswalsuraj487.github.io/publications_and_projects/data/Autoencoder.html)) | [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](http://github.com/jaiswalsuraj487/TEGD_thirdai_hackathon)) | [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](http://jaiswalsuraj487.github.io/blogs/blogsData/Image_super_resolution.html)) | [May 2023] |
| * Implemented generative adversarial network to improve image quality using CNN with residual connections | |
| * **Cryptocurrency Analysis & Trading Bot** (GitHub: [link](http://github.com/jaiswalsuraj487/Reddit-Cryptocurrency-Trading-Bot)) | [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 |
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