Suraj Jaiswal
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Education

Degree	Institution	CPI	Year
MTech (CSE)	Indian Institute of Technology Gandhinagar (IIT Gn)	8.14	2022 – Present
BTech (CSE)	G.H. Patel College of Engineering and Technology, GTU	8.82	2018 – 2022

Research Paper and Publication

- **Towards Scalable Identification of Brick Kilns from Satellite Imagery with Active Learning** **[July 2023 - Present]**
  (Prof. Nipun Batra) GitHub repo: github.com/jaiswalsuraj487/brick-kiln-repo
  - Paper **accepted** and in nomination for **best paper award** in **NeurIPS 2023** Workshop on ReALML (Active learning and Machine learning in real world)
  - **Live demo:** brick-kiln-detector-app.streamlit.app of **Brick kiln detector application** on Streamlit, which downloads brick kilns in the given area specified by the user and applied Grad-Cam to visualize the region where the model focuses
  - 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 over 700 new brick kilns** in the Indo-Gangetic region, showcasing the potential for global application in emissions monitoring and policy regulation

Achievements

- **1st Prize among 70+ teams - Third AI India Hackathon. Worked on *Neural dB*** engine to search query on ***google drive*** for text and audio data

Projects

- **Meta-Learning: Hyper-Networks and Neural Processes** **[Nov 2023]**
  Blog: jaiswalsuraj487.github.io/publications_and_projects/data/Hypernet_neural_process.html
  - Meta learning to learn task specific network to reconstruct whole given few context points of celebrity face image
- **Image to image for Climate Modelling using Auto-Encoder** **[Oct 2023]**
  Blog: jaiswalsuraj487.github.io/publications_and_projects/data/Autoencoder.html
  - 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** **[Aug 2023]**
  GitHub repo: github.com/jaiswalsuraj487/TEGD_thirdai_hackathon
  - **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's accessibility**
- **Enhancing Images with GAN-based Super Resolution** **[June 2023]**
  Blog link: jaiswalsuraj487.github.io/blogs/blogsData/Image_super_resolution.html
  - Implemented generative adversarial network to improve image quality using CNN with residual connections for generator and discriminator networks
- **ML Algorithms Implementation (Prof. Nipun Batra)** **[Jan 2023 – May 2023]**
  - Designed **movie recommendation system** using K-Nearest Neighbors algorithm
  - **Live demo** huggingface.co/spaces/jaiswalsuraj/K-Nearest-Neighbour-app deployed on Hugging-face to **visualize K-Nearest Neighbors**
  - Implemented **decision trees**, **random forest** classifier/regressor with bagging and boosting, as well as **l**inear regression using GD, SVD, L1 and L2 regularization and **Bayesian LR with predictive posterior**
  - Conducted a comparative study between different pretrained models using **transfer learning** on image classification
- **Cryptocurrency Analysis & Trading Bot** **[Jan 2022 – April 2022]**
  GitHub repo: github.com/jaiswalsuraj487/Reddit-Cryptocurrency-Trading-Bot
  - Developed an AI **bot to fetch posts from subreddit** through the *praw* library & the reddit API
  - Implemented sentiment analysis on this collected data
  - **Enabled the bot to trade** specific **cryptocurrencies** using Binance API **based on technical indicators**, primarily using the RSI from technical analysis library, and **integrated sentiment analysis into its trading decisions**.

Experience

- **Teaching Assistant, IIT Gandhinagar** **[Nov 2022 - Present]**
  - **Natural Language Processing (**Prof. Mayank Singh**)**: Assisted the professor in evaluating papers, assignment and quizzes.
  - **Probability, Statistics, and Data Visualization** (Prof. Shanmuganathan): Conducted hands-on lab session to instruct over 20+ students probability distributions and fundamental ML concepts
  - **Computing** (Prof. Nipun Batra): Developed programming questions for over 300 students using the Replit browser-based ide and provided Python tutorials to 20+ students

Technical Skills

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