Aditi Asati

BS-MS Graduate · Mathematics · Machine Learning
IISER Tirupati · IIT Bombay · INSPIRE SHE Fellow

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Navsari, Gujarat - 396445

Job Profile

BS-MS Mathematics graduate from IISER Tirupati with a strong foundation in **machine learning**, and **data-driven problem-solving**. Experienced in developing **innovative ML applications**. Seeking a data-driven role leveraging programming expertise and ML research experience to solve complex business problems through innovative analytical solutions.

Skills

- **Languages & Frameworks:** Python, SQL, FastAPI, Streamlit
- **Tools and Technologies:** Docker, Git, GitHub, Linux
- **Data Analysis & Modelling**: Excel, Numpy, Pandas, Matplotlib, Scikit-learn, Tensorflow, Pytorch, LangChain
- **Statistical Analysis**: A/B testing, Statistics & Maths

Education

BS-MS Dual Degree *Tirupati, India*

Indian Institute of Science Education and Research (IISER)

MS Thesis at Indian Institute of Technology Bombay (IITB) *August 2019 - July 2024*

Specialization: Mathematics
Master's CGPA: 8.48/10 ; Total CGPA: 7.6/10
MS Thesis Project Score: 8.9/10

12th Grade *Nagpur, India*

Dr. Ambedkar College *August 2018 - June 2019*

Board: Maharashtra State Board
Stream: Science (PCM + Electronics)
Percentage: 85%

Experiences

Master's Thesis Project Student *Bombay, India*

Koita Centre for Digital Health (KCDH),

Indian Institute of Technology Bombay *Jun 2023 - Present*

Advisors: Dr Kshitij Jadhav (Supervisor; Koita Centre for Digital Health, IITB) and Dr Kaustubh Patil (Co-supervisor; Forschungszentrum Jülich)

- Researched synthetic data utilization to mitigate site effects from structural MRI data.
- Designed and implemented SMOTE algorithm for synthetic datapoint generation.
- Engineered pipelines for execution of experiments (using **Scikit-learn**, **Python**, and **Shell Scripting**) to evaluate synthetic dataset effectiveness in brain age prediction.
- Collaborated with an international team of researchers to address site effects in MRI data.
- Explored advanced ML algorithms in **object detection**, **image recognition**, **data efficient ML**.

Semester Project Student *Tirupati, India*

Indian Institute of Science Education and Research Tirupati *Jan 2023 - April 2023*

Advisors: Dr Hussain Bhukya (IISER Tirupati) and Dr Debasish Koner (IIT Hyderabad)

- Constructed an attention-based deep learning model using Transformers in **Tensorflow**.

Projects

Hazelnut (Demo)

- Engineered a **LangChain**-based chatbot for natural language to SQL query generation and execution.

- Enhanced query accuracy by integrating database schema awareness (using **SQL**) and conversation context.
- Leveraged **MongoDB** database for efficient storage and retrieval of chat history.
- Developed frontend using **Streamlit** and backend with **FastAPI**.

Tomato Doctor (Demo)

- Designed a deep learning model utilizing transfer learning & **TensorFlow**, achieving 86% test accuracy in tomato leaf disease diagnosis.
- Implemented confidence scoring for each prediction to indicate accuracy.
- Created a web application using **Streamlit** and **FastAPI**, containerized with **Docker**.

Interpolation for Brain Age Prediction

- Generated and analyzed SMOTE-based synthetic datasets to build brain age prediction models using **Python** and **scikit-learn**.
- Executed multiple experiments to evaluate synthetic dataset effectiveness in brain age prediction using **Shell Scripting** & **Python**.
- Authored a comprehensive thesis and delivered a 30-mins oral thesis defense presentation, securing a top 93.7% project score.

News Article Summarizer

- Developed a program extracting title, summary, authors, and publishing date from news article URLs using **NLP**.
- Incorporated sentiment analysis to determine article polarity.

Relevant Coursework

During my first two years, I completed undergraduate coursework in physics, chemistry, biology, and mathematics. Here are some selected courses that I have completed at IISER:

- Data Science I
- Data Science II
- Graph Theory
- Linear Algebra
- Operations Research
- Computational Methods
- Probability and Statistics
- Discrete Mathematics
- Single & multivariable Calculus

Certifications and Training

Data Analysis and ML using Python *Remote*

E&ICT Academy, IIT Roorkee *Aug 2020 - Aug 2020*