Aditi Asati

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

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Seeking an industry position in Machine Learning (ML), leveraging a **Master's degree in Mathematics** and hands-on **research experience in ML** to drive innovation and contribute to cutting-edge projects in the field of machine learning.

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 - May 2024*

   Specialization: Mathematics
   CGPA: 7.6
   MS Thesis Project Score: 8.9

12th Grade   *Nagpur, India*

Dr. Ambedkar College   *August 2018 - June 2019*

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

10th Grade   *Bhandara, India*

Sunflag School   *Apr 2016 - Apr 2017*

   Board: CBSE
   CGPA: 10.0
   Percentage: 96.6%

Skills

- **Languages and Frameworks:** Python and its data analysis libraries (Numpy, Pandas, Matplotlib), SQL, Shell Scripting, Scikit-learn, Pytorch, Keras, LangChain

- **Tools and Technologies:** Git, GitHub, Linux

- **Other:** Technical writing (Blogs posted on my website), strong presentation skills, research skills, LaTeX, mathematical rigor.

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)
   Funding: The project was funded by *TMH Project fund*.
   Objective: Conducted in-depth research on using synthetic data to reduce site effects from structural MRI data and enhance the accuracy and generalizability of brain age prediction models. Designed and implemented SMOTE algorithm for producing synthetic datapoints. Created pipelines for running various experiments (using **Scikit-learn**, **Python**, and **Shell Scripting**) on investigating the effectiveness of synthetic data for brain age prediction. Presented findings to academic peers and faculty members. Also explored 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)
   Objective: The aim of the research project was to build an attention based deep learning model using **Transformers** in **Keras** to predict the DNA binding site of transcription factor by training it on the available data of protein sequences and their respective binding sites.

Summer Intern   *Pune, India*

Indian Institute of Science Education and Research Pune   *May 2022 - July 2022*

   Advisor: Dr Raghav Rajan (IISER Pune)
   Objective: Simulated the Hodgkin-Huxley Model in **Python** (using **Numpy**, **Pandas**,and **Matplotlib**) of three different neuron types present in the nucleus HVC inside Zebra finch's brain to characterize their respective electrophysiological properties.

Projects

Interpolation for Brain Age Prediction
Generated and analyzed synthetic dataset created using the SMOTE algorithm, which was then used to build brain age prediction models. Presented findings in a comprehensive thesis document and oral defense.

AI Bicep Curls Counter
An AI that counts the number of Bicep Curls in real-time using **Open CV** and **Scikit-learn**.

News Article Summarizer
A program that tells the title, summary, authors, publishing date, and polarity of the news article just by providing its URL using **NLP** and **Sentiment Analysis**.

Poetic Text Generator
A program which generates poetic texts like Shakespeare using **LSTM** for **language modelling** and **Tensorflow** for training.

Relevant Coursework

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

- Data Science I
- Data Science II
- Graph Theory
- Operations Research
- Computational Methods

- Discrete Mathematics
- Linear Algebra
- Single Variable Calculus
- Multivariable Calculus
- Probability and Statistics

- Nonlinear Dynamics
- Real and Complex Analysis
- Ordinary and Partial Differential Equations
- Measure Theory
- Group Theory

Certifications and Training

- Data Analysis and ML using Python, E&ICT Academy, IIT Roorkee

Achievements

BS-MS	**Top 1% of Class XII**, INSPIRE-SHE Fellow	*2019 - Present*
10th Std	**Level 1: 2nd rank**, National Science Olympiad (NSO)	*School Level*
10th Std	**Level 1: 2nd rank**, International Mathematics Olympiad (IMO)	*School Level*
8th Std	**Level 1: 3rd rank**, International Mathematics Olympiad (IMO)	*School Level*
8th Std	**Student of the Year Award**, Sunflag School	*School Level*

Extracurricular Activities

Presentation Skills

- Delivered two talks on my research project in the Journal Club at KCDH, IITB.
- Presented two research papers in the research group meeting at KCDH.
- Explained the theory of the SVM algorithm and Lagrange Approach to Convex Optimization in the Math Club at IISER Tirupati.

Volunteer Work

- Donated blood in a blood donation drive conducted by Red Cross Society, AP.
- Participated in Campus Cleaning drive as part of Swachh Bharat Abhiyan.

Hobbies

- Cooking, baking, painting, walking, rangoli making, writing blogs.