

# 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

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### 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.

### 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**.

### AI Bicep Curls Counter

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

### Poetic Text Generator

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

## Relevant Coursework

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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:

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|-------------------------|------------------------------|---|
| • Data Science I        | • Discrete Mathematics       | • Nonlinear Dynamics                          |
| • Data Science II       | • Linear Algebra             | • Real and Complex Analysis                   |
| • Graph Theory          | • Single Variable Calculus   | • Ordinary and Partial Differential Equations |
| • Operations Research   | • Multivariable Calculus     | • Measure Theory                              |
| • Computational Methods | • Probability and Statistics | • Group Theory                                |

## Certifications and Training

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

## Achievements

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

## Extracurricular Activities

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### 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.