

Adithya Jairam Iyer

🌐 adithyaiyer1999.github.io

✉ 16D110011@iitb.ac.in

🔗 adithyaiyer1999

Research Interests

•Deep Learning •Computer Vision •Remote Sensing •Natural Language Processing

Education

Indian Institute of Technology Bombay <i>Dual Degree(Btech+Mtech) in Metallurgical Engineering and Materials Science</i>	GPA: 8.55/10	2016-2021
Technical University of Denmark (DTU) <i>Student Exchange Program</i>	GPA: 9.33/10	Fall 2019

Professional Experience

McKinsey & Company Risk Dynamics Group <i>Analyst/Associate Consultant</i>	Jul'2021-Jan'2022 <i>Delhi</i>
<ul style="list-style-type: none">Responsible for the complete credit underwriting automation for the Self-Employed customer segment for a major banking client; model to automate underwriting of portfolio worth 500+ Cr annually.Built 5+ qualitative and quantitative models from bureau, financial and other data inputs.Conducted back-testing, ensured population stability of variables and planned and executed complete on-ground implementation of models; model to be used by 100+ employees.	
EXL Analytics <i>Machine Learning and Data Science Intern</i>	May-Jul'2019 <i>Gurugram</i>
<ul style="list-style-type: none">Automated credit risk estimation and segmentation of merchant and consumer accounts based on their transaction history by implementing NLP and Machine Learning modelsBuilt 50+ financial variables that captured credit risk by pre-processing over 3 million data entriesPredicted probability of default and improved Gini by 500 basis points over existing credit risk modelsReceived a Pre-Placement Offer for exemplary performance during the course of the internship	

Scholastic Achievements

Selected as an Exchange Student (4/800+) at Technical University of Denmark (DTU) , Copenhagen	[2019]
Achieved a percentile of 99.57 in JEE Mains 2016 and 98.8 in JEE Advanced 2016	
Ranked 8 th in the state of Maharashtra in the Regional Mathematics Olympiad (RMO)	[2015]
Ranked in the top 1% of students in the National Standard Examination in Physics (NSEP)	[2015]

Entrepreneurial Venture

Budnip : Copernicus Accelerator, European Space Agency (ESA) <i>Mentor: Dr Alireza Taravat, Deimos Space UK</i>	Dec'2019-Present
<i>Using Deep Learning to detect crop features and diseases by analysing satellite imagery from Sentinel 2</i>	
<ul style="list-style-type: none">Winner of the Oi-X Hackathon jointly conducted by DTU Skylab and Copernicus Programme in DenmarkAttended the start-up bootcamp in Helsinki, Finland as part of the European Space week and selected to be a part of the Copernicus Accelerator, a platform by the ESA for a period of 1 yearBuilt the pre-processing pipeline to extract raster data from Sentinel Level-2A; Built 15+ vegetative indicesGenerated training data from raster and shape-files, built data augmentation tools to expand the datasetBuilt a U-Net based semantic segmentation Deep learning model to classify crops based on indices createdPresented poster titled '<i>Comparative Study of Neural Networks and Machine Learning Models for Winter Wheat Crop Classification in Denmark</i>' at the ESA EO Φ-week 2020 🏆	
<i>Received business and market related training with the Copernicus Accelerator Training Lab</i>	
<ul style="list-style-type: none">Conducted 40+ interviews with potential business partners to identify target market and build business modelFinalist and 2nd runner up in the Copernicus Masters - University Challenge 2020 🏆	

Research Experience and Projects

Structure-Property Relations from Microstructural Images ☯

Apr'2020-Present

Master's Project: Guide: Prof. M P Gururajan and Prof. Hina Gokhale

IIT Bombay

- o Awarded Undergraduate Research Award (URA3) for excellence in research by the Dean
 - o Reviewed literature about the state of the art statistical descriptors of Microstructural images
 - o Derived **Spatial Probability Distributions** of local states in Cahn-Hilliard generated binary microstructures after pre-processing and **benchmarked** results with state of the art python libraries
 - o Implemented a custom **Quick Union-Find** based **Hoshen-Kopelman** clustering algorithm for binary images with **periodic boundary conditions**
 - o Calculated parameters such as precipitate size distribution, sphericity and inclination for generated microstructures
 - o Introduced a **precipitate tracking algorithm** on binary microstructures to track local states during evolution
 - o Incorporated **Level-set methods** to calculate interfacial velocity and compared results with analytical solutions
 - o Formulated and implemented a **Monte Carlo method** to quantify convexity of precipitate shape
 - o Compared evolution of isotropic, and anisotropic microstructures on the derived statistical and spatial parameters
- Future research focused on using the derived features to formulate **Structure-Property Relationships** in **Anisotropic simulated and experimental microstructures**

Missing Data Importance Weighted Autoencoder (MIWAE) ☯

Sep-Dec'2019

Guide: Prof. Jes Frellsen

DTU Copenhagen

- o Reviewed literature about generative models, with emphasis on variational autoencoders
- o Implemented Importance Weighted Autoencoder (IWAE) by **Burda et al.** on MNIST dataset using Pytorch
- o Removed pixels to create **incomplete MNIST** dataset; used custom imputation functions pre-training
- o Built a **MIWAE** by training on imputed data; produced complete images from incomplete test dataset

Planner App : Android application to manage tasks ☯

May-Jul'2018

Seasons of Code: Web and Coding Club IITB

IIT Bombay

- o Built an **Android application** where users can store, delete and edit their daily from any android device
- o Designed the network architecture on the **Django** Web framework; based interaction through **REST APIs**
- o Enabled sharing of tasks between users by implementing models like many-to-many fields and foreign keys
- o Implemented the **Retrofit HTTP client** in Android Studio to manage requests with the server

The Saviour: Game Development

Mar'2018

Ubisoft Game Jam

Ubisoft - IIT Bombay

- o Was one among only 3 teams selected to represent IIT Bombay in the **Ubisoft Game Jam 2018**
- o Built a multi-level **3D arcade game** using the **Unity Game Engine** while working in a team of 5

Teaching Experience

MM217-Data Analysis and Interpretation

2020

Teaching Assistant

IIT Bombay

- o Conducted fortnightly tutorials on statistics for 2nd year undergraduates on the **R Programming** language
- o Involved in correction of exams and addressing conceptual doubts for a class of **130+** students

Relevant Coursework & Programming Skills

- o **Computation & Modelling:** Process Control, Simulation and Optimisation, Data Analysis and Interpretation, Numerical Analysis, Introduction to Machine Learning and Data Mining
- o **Image Processing & Deep Learning:** Digital Image Processing of Remotely Sensed Data, Deep Learning
- o **Miscellaneous:** Probability and Random Processes, Linear Algebra, Differential Equations, Calculus
- o **Online Courses:** Data Structures and Algorithms(Princeton), Computer Vision(Microsoft)
- o **Programming Skills/Software Packages:** Python, R, C++. JAVA, MATLAB, L^AT_EX, SNAP

National and International Debate

Prague Open, Czech Republic	<ul style="list-style-type: none">o Semi-Finalist and 5th best teamo 7th best speaker, beat 50+ participantso Defeated top European teams
COEP Debate'19, Pune	<ul style="list-style-type: none">o Finalisto 4th best team
SMC Debate, Chennai	<ul style="list-style-type: none">o Semi-Finalisto 8th best team
The IIT Bombay Inter-Varsity Debate	<ul style="list-style-type: none">o Organizing Committee: Registrations Heado Managed 250+ Participants