Soumen Sinha

Master of Science
in Data Science and AI
TU Delft, Netherlands

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GitHub
LinkedIn
Website

Education

Degree	Institute	Board / University	CGPA/Percentage	Year
MS in Data Science and AI	TU Delft, Netherlands	TU Delft	7.7/10	2024-present
B.Tech CSE	Mahindra University, Hyderabad	Mahindra University	8.5/10	2020-2024
Senior Secondary	Faculty Higher Secondary School	CBSE	94%	2020
Matriculation	Faculty Higher Secondary School	CBSE	95.6%	2018

Internship and Work Experience

- **Absolute Audio Labs** *April 2025 - Present*
  Deep Learning Engineer Leiden, Netherlands
  – Developing efficient neural network architectures for audio scene classification for cortex M3 chip.
  – Developing low and memory efficient neural architectures to fit an embedded device which generalizes on unseen data distribution.

- **TU Delft** *November 2024 - March 2025*
  Teaching Assistant Delft, Netherlands
  – **Security and Cryptography (CS 4520)** (November 2024 - March 2025)
    * Assisted in conducting in-person lab sessions for 200+ students and grading assignments.
  – **3D Visualisation (DSAIT 4080)** (November 2024 - December 2024)
    * Worked on curating assignments for the course (8 hours/week) under the supervision of Prof. Thomas Höllt.

- **Interview Kickstart** *March 2024 - July 2024*
  Intern Remote, India
  – Worked with ML team and engineering team to develop problems for Machine Learning programs.
  – developed 25+ ML problems for online curriculum

- **DELL Technologies** *January 2024 - May 2024*
  Intern Hyderabad, India
  – Developed a Splunk dashboard to track 15 different report usage metrics and a web application to to integrate the Splunk dashboard to Dell Design System.
  – Migrated Dell design system 1.0 to Dell design system 2.0.

- **Brock University and Wilfrid Laurier University** *December 2023 - present*
  Research Assistant Canada
  – Working on various models to convert real values embeddings to binary embeddings using various thresholding techniques like Modified Coordinate Descent(MCD) Algorithm, Coordinate Descent etc. We surpassed text classification accuracy using binary embeddings by 1.5% as compared to traditional methods which use BERT Embeddings

- **IIT Guwahati** *July 2023 - Feb 2024*
  Research Assistant Assam, India
  – Worked on deep learning models to predict intricate eye movement patterns. This endeavor encompasses diverse aspects such as eye and face tracking, as well as CG modeling for animation. Our approach is hinged on an expansive repository of 360-degree videos and saliency maps, enabling us to predict the sequence of eye movements.

- **DELL Technologies** *July 2023 - September 2023*
  Intern Hyderabad, India
  – Worked with Dell's DSA and product teams to optimize operations.
  – developed a Splunk dashboard to track report usage metrics and a Python application to suggest user preferences, improving the usability of reports by 15%. The dashboard provides insights into how users are interacting with the reports, such as which reports are the most popular and which features are used the most. The Python application was used to identify patterns in user behavior and suggest the most relevant preferences.

- **National University Of Singapore** *June 2022 - July 2022*
  Academic Intern Singapore
  – Developed a custom based CNN (CAPNET) with an accuracy of 97% to detect vulnerability of text based Captchas on high trafficking website
  – Grade - A+

Research Publications

- **Soumen Sinha**, Neha Bharill, Om Prakash Patel, Mahipal Jetta - **Active Learning guided Gaussian Process Regressor for Non-Linear PDE Modeling for environmental simulations** *-accepted at Journal of Engineering Applications of Artificial Intelligence (Impact Factor-8)*
  Paper Link

- **Soumen Sinha**, Lara Bastos - **Active Learning guided Gaussian Process Regressor for Non-Linear PDE Modeling for environmental simulations** *-accepted for publication(IEEE) and presented at IEEE Symposium Series on Computational Intelligence 2025, Norway*
  Paper Link

- Sayarnil Ganguly, Sanjana Reddy Katham, Sanyam Agarwal, **Soumen Sinha**, Rahul Roy- **Denoising Arbitrary Combination of Noise using a Hierarchical Ensemble of AutoEncoder** *-accepted for publication(Springer) and presentation at 27th International Conference on Pattern Recognition (ICPR) 2024, Kolkata, India*
  Paper Link

- Pranav Sunil, **Soumen Sinha**, Rahul Roy- **SegNet-ATT: Cross-Channel and Spatial Attention-Enhanced U-Net for Flood Area Predictions** *-accepted for publication(Springer) and presentation at 27th International Conference on Pattern Recognition (ICPR) 2024, Kolkata, India*
  Paper Link

- **Soumen Sinha**, Shahryar Rahnamayan, Azam Asilian Bidgoli -**Optimal Barcode Representation for NLP Embeddings** *- accepted for publication(IEEE Xplore) and presentation at IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC), Malaysia*

- **Soumen Sinha**, Tanisha Rana, Rahul Roy -**A Novel Cascade Classifier Framework for Open-World Medicinal Plant Classification** *-accepted for publication(IEEE Xplore) and presentation at 48th IEEE Computers, Software, and Applications Conference, Osaka, Japan (IEEE COMPSAC 2024)*
  Paper Link

- **Soumen Sinha- ALRA: Adaptive Low-Rank Approximations for Neural Network Pruning** *-accepted for publication(IEEE Xplore) and presentation at 48th IEEE Computers, Software, and Applications Conference, Osaka, Japan (IEEE COMPSAC 2024)*
  Paper Link

- Pawan Chinnari, **Soumen Sinha**, Budankayla Ishaa, Neha Bharill, Om Prakash Patel- **Semantic Segmentation in Aerial Imagery: A Novel Approach for Urban Planning and Development** *--accepted for publication(IEEE Xplore) and presentation at 48th IEEE Computers, Software, and Applications Conference, Osaka, Japan (IEEE COMPSAC 2024)*
  Paper Link

- **Soumen Sinha**, Pranav Sunil, Neha Bharill, Om Prakash Patel -**HybridSeqNet: A Multimodal Approach Incorporating Convolutional and Long Short-Term Memory Networks for Comprehensive Structural Protein Classification** *- accepted for publication(IEEE Xplore) and presented at 26th IEEE/ACIS International Winter Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing, Taiwan*
  Paper Link

- Saketh Innani, Pawan Chinnari, **Soumen Sinha** , Mehek Khan , Neha Bharill, Om Prakash Patel -**A Novel Robust Kernelized FCM based Multi objective Simultaneous Learning Framework for Clustering and Classification** *- accepted for publication(IEEE Xplore) and presented at IEEE Symposium Series on Computational Intelligence, Mexico City.*
  Paper Link

- **Soumen Sinha** , Anish Nethi , Mahipal Jetta- **Multiplicative Gaussian Noise Denoising using Partial Differential Equations and Activation Functions: A Robust and Stable Approach** *- accepted for publication(ACM proceedings) and presented at 7th International Conference on Algorithms, Computing and Systems, Greece*
  Paper Link

- **Soumen Sinha** , Md Imaz Surve - **CAPTCHA Recognition and Analysis Using Custom Based CNN Model - Capsecure** *- accepted for publication in IEEE Xplore and presented at ICETCI 2023.*
  Paper Link

- **Soumen Sinha**, Saketh Innani, Pawan Chinnari, Mehek Khan - **Sentiment Analysis of Russia-Ukraine Conflict: A Hybrid Approach Using VADER , GloVe-embedding and LSTM** *- accepted for publication(ACM proceedings) and presented at 7th International Conference on Computer Science and Artificial Intelligence (CSAI 2023) , Beijing , China*
  Paper Link

Projects

- **Hawk** *Jan 2023 - Aug 2023*
  *Mahindra University, Hyderabad -**Prof Prasad Pokkunuri*** **Github**
  – developed an autonomous drone for carrying a medical parcel and autonomously deliver packages on designated areas. The entire mission was autonomous starting from take off , payload dropping and then returning to home base.

- **Training Adaptive Models to learn PDEs for Multiplicative Noise Removal** *Jan 2022 - Jan 2023*
  *Mahindra University, Hyderabad - **Prof Mahipal Jetta*** **Github**
  – Studying the similarity between numerical PDE(Partial Differential Equation) algorithms and neural networks. Developed adaptive models for multiplicative noise removal while prioritizing PSNR optimization to elevate denoising performance. We are trying to develop robust neural network framework to learn different PDEs, activation function for image denoising

- **Multiobjective optimization for simultaneous learning of clustering and classification** *Jan 2022 - July 2023*
  Mahindra University, Hyderabad - ***Prof Neha Bharill*** *and* ***Prof Om Prakash Patel*** **Github**

  – In this project we proposed a novel robust kernelized Fuzzy c-Means based multi-objective simultaneous learning framework (RKFCM-MSCC) for both clustering and classification learning.

- **Cap-Secure** *June 2022 - Aug 2022*
  National University Of Singapore, Singapore - ***Prof TAN Wee Kek*** *and* ***Prof Amirhassan Monajemi*** **Github**

  – Developed a custom based CNN (CAPNET) to detect vulnerability of text based Captchas on high trafficking website helping websites to come up with less vulnerable Captchas.

- **Feza** *Jan 2022 - Sept 2022*
  Mahindra University, Hyderabad **Github**

  – constructed a UAV with S1223 airfoil that adhered to the requirements of SAE, India. The UAV was launched manually from a circular location and carried payload(900 grams), which necessitated a focus on controllability during the design process. Priority was given to weight optimization for the payload and ensured structural strength.

Technical Skills

–**Programming Languages**: Python, C/C++, MATLAB

–**Tools and Frameworks**: Jupyter, Visual Studio, Pytorch, Tensorflow, Scikit-Learn, Spark, Splunk, XFLR, Latex & Overleaf

–**Operating Systems**: MAC-Os, Windows, IOS & Android

Key courses taken

–**Bachelor Courses**: Introduction to Computer Science, Object Oriented Paradigm in Java , Data Structures and Algorithms, Computer Organization & Architecture, Python Programming, Operating System, Signals and system, Database Management System, Probability and Statistical Methods, Discrete Mathematics, Numerical Methods, Computer Networks & Security, Software Engineering, Introduction to Machine Learning , Linear Algebra, Introduction to Calculus, Mathematical Modelling in Image Processing, Microprocessors and Interfacing, High Performance Computing ,Deep Learning, Reinforcement Learning, Compiler Design, Distributed Systems, Cryptography and Network Security, Introduction to Robotics & Design Thinking

–**Master Courses**: Probabilistic AI and Reasoning, Machine Learning and Deep Learning and Data Management and Engineering

Languages

–Working Proficiency - **English** , **Hindi** , **Assamese**, **Bengali** , **Odia**

–Elementary Proficiency - **French**

Positions of Responsibility

- **President**,Inquisitive Club, Quiz club , Mahindra University *Apr. 2021 - August 2023*
- **Head**,Drone Development(Aero Club), Mahindra University *Jan 2023 - August 2023*
- **Goal Keeper**,Football Team, Mahindra University *Jan 2021 - July 2024*
- **Member**,Happy Club(NGO), Assam *Jan 2020 - present*

Achievements and Awards

Academic Scholarship

– Awarded academic Scholarship worth $1250 (Rs100000) for excellent academic performance in the academic year 2023-2024
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– Awarded academic Scholarship worth $1250 (Rs100000) for excellent academic performance in the academic year 2020-2021

PRMO Qualified

– Qualified Pre regional Mathematics Olympiad (ASSAM)

IEEE CIS Grant

– Received IEEE CIS grant to travel and present at IEEE SSCI (Social symposium Series on Computational Intelligence), Norway 2025.

ICETCI 2023

– Best Presenter Award for paper presentation at 3rd ICETCI 2023. Paper Title- CAPTCHA Recognition and Analysis Using Custom Based CNN Model - Capsecure

Bacherlor in Music (Musical Instrument - Tabla)

– Degree awarded by- Bhatkhande Sanskriti Vishwavidyalaya, Lucknow, India
– 2nd Division

Football Winners
– KPRIT (Kurukshetra National level Inter - College Tournament
– Malla Reddy College of Engineering inter college tournament

Football Runners Up
– BVRIT (Padmabhusan DR BV Raju Memorial Tournament)
– Malla Reddy Inter College Tournament