SUDAM KUMAR PAUL

M.Sc. in Big Data Analytics
Ramakrishna Mission Vivekananda Educational and Research Institute, Belur Math, West Bengal, India

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PROJECTS

- **Comparative Analysis of Asset Pricing Models: CAPM, APT and Fama-French Factors**
  Linear Regression | Multivariate Regression [Link] *June 2025 - Ongoing*
  - Performing a comparative analysis of CAPM, APT, and Fama-French models using regression techniques to evaluate their effectiveness in explaining asset returns.
- **GauGan: Conditional Image Generation Using Gaussian-GAN**
  Deep Learning | GANs | VAEs | SPADE [Link] *May 2025 - Ongoing*
  - Implementing a conditional GAN model based on SPADE and VAE principles (GauGAN) to generate photorealistic images from semantic segmentation maps using the PASCAL_VOC_2012 and Facades datasets
- **Vision Guided Robotic Manipulation**
  OpenCV | ESP32 | IoT [Link] *Feb 2025 - May 2025*
  - A Computer-Vision Integrated Robotic Arm for Real World Object Interaction.
  - Developed real-time object interation system based on computer vision.
- **Implementation of ANN from Scratch**
  Python | Numpy | Matplotlib[Link] *March 2025 - April 2025*
  - Designed and implemented a two-layer fully connected neural network from scratch using NumPy for handwritten digit classification on the MNIST dataset with sigmoid and softmax layers, trained via cross-entropy loss and gradient descent variants, achieving 96.92% train accuracy and 94.52% test accuracy with custom forward/backward propagations and manual parameter initialization.
- **Unsupervised Learning using Py-Spark**
  Python | Spark Cluster | Linux Env | Spark MLlib [Link] *March - May 2025*
  - Developed a distributed K-Means clustering pipeline on **2 Nodes** using PySpark on the Iris dataset, including feature engineering, scaling, and optimal cluster selection using Silhouette scores. Visualized cluster results with 3D scatter plots and evaluated model performance.
- **Evaluating Regression Models for Cost of Living Index Prediction**
  Scikit-learn | Numpy | Pandas | Matplotlib [Link] *Aug 2025 - Sep 2025*
  - A comparative study of various regression techniques, including linear regression, polynomial regression, gradient descent methods and regularization techniques to predict the Cost of Living Index and analyze their performance and computational efficiency on Cost_of_Living_Index_2024 dataset.

COURSEWORK

- Data Structures and Algorithms using Python
- Machine Learning
- Deep Learning and it's application in NLP
- Linear Algebra
- Computer Vision
- Statistics-1
- Advanced Statistical Methods
- Pyspark and Graph Database-Neo4j
- Hadoop
- Probability and Stochastic Process
- Finance and Econometrics
- Time Series and Survival Analysis

ACHIEVEMENTS/CERTIFICATIONS

- **NPTEL**: Programming, Data Structures And Algorithms Using Python (*Jan - Mar, 2025*), offered by IIT Madras.
- Selected for Summer Intern at IASc-INSA-NASI Summer Research Internship program 2025 in Financial Economics, IIT-KGP.
- **NPTEL**: Python for Data Science (*Aug - Sep, 2025*), offered by IIT Madras.

EXPERIENCE

IASc-INSA-NASI Summer Intern

IIT, Kharagpur

June 2025 - July 2025 | Kharagpur, India

Comparative Analysis of Asset Pricing Models : **CAPM**, **APT** and **FFF** under the supervision of **Dr. Abhijeet Chandra**.

EDUCATION

- **Ramakrishna Mission Vivekananda Educational and Research Institute, Howrah**
  M.Sc. in Big Data Analytics
  2024 – Present (Till Sem-1) CGPA: 7.17
- **Barasat Govt. College under WBSU**
  B.Sc.(H) in Mathematics
  2020 – 2023 CGPA: 9.87
- **Habra High School(H.S.)**
  Higher Secondary (10+2)
  2018 – 2020 Score: 96.4%
  Secondary Education (10)
  2012 – 2018 Score: 93.1%

TECHNICAL SKILLS

- **Programming Languages:** Python, R(Basic), LaTeX.
- **Libraries & Frameworks:** PySpark, Hadoop, Neo4j, PyTorch, TensorFlow, Numpy, Pandas, Matplotlib, Scikit-Learn, OpenCV, Ray.
- **Tools:**Git/Github, Google Colab, Jupyter Notebook, VS Code, ChatGPT, MS Office.
- **Operating System:**Windows, Linux (Ubuntu).

ACTIVITY

- **Tech Fest Organiser**
  - Team Member at RKMVERI Computer Science department fest **Perceptron 2025** Puzzle Group

HOBBY

- Reading Books, Watching Movies