Arnab Singha

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LinkedIn
GitHub

Education

- **Ramakrishna Mission Vivekananda Educational and Research Institute** *2024-26*
  M.Sc. in Computer Science (CGPA: 6.67 till 1st Sem) Ongoing
- **Midnapore College (Autonomous)** *2021-24*
  B.Sc.(H) in Computer Science CGPA: 8.19
- **Midnapore Collegiate School** *2019-21*
  Higher Secondary Percentage: 85

Projects

- **A Comparative Study of Classification Algorithms on the EMNIST dataset** *November 2024*
  Evaluation of ML algorithms for EMNIST dataset COMPLETED
  – Tools: Python, Scikit-learn, Numpy, Pandas
  – Compared Logistic Regression, Softmax Regression, Decision Trees, Random Forest
- **Comprehensive Regression Analysis to Predict Sales Based on Advertising Data** *September 2024*
  Applied regression techniques to predict sales based on advertising data COMPLETED
  – Tools: Python, Scikit-learn, Matplotlib
  – Implemented linear, polynomial and regularization techniques(Ridge, Lasso, ElasticNet etc
- **Vision-Guided Robotic Manipulation** *April 2025*
  A Computer Vision-Integrated Robotic Arm for Real-World Object Interaction COMPLETED
  – Tools: ESP32, OpenCV, IoT
  – Developed real-time object interaction system based on computer vision
- **Object Detection using YOLO in qemu emulated Raspberry Pi with Kafka** *May 2025*
  Object detection in a Qemu-emulated Raspberry Pi connected to a kafka system COMPLETED
  – Tools: YOLOv11, Qemu, Kafka, Raspberry Pi
  – Distributed object detection pipeline
- **Segment display design for Bengali characters** *August 2024*
  43-segment display for Bengali characters COMPLETED
  – Tools: Digital Electronics, Circuit Design
  – Designed display for Bengali and English vowels, consonants, compound characters and numerals
- **Chatbot: Neutron** *February 2025*
  LLM powered chatbot COMPLETED
  – Tools: Google Gemini, Streamlit
  – Interactive chatbot interface
- **Exam Management System** *April 2023*
  System with scheduling, result's portal, authentication and MCQ features COMPLETED
  – Tools: HTML, CSS, JavaScript, Node.js, Express.js, Database
  – Includes real-time answer checking
- **Document Scanner** *April 2025*
  Computer vision-based scanner COMPLETED
  – Tools: Python, OpenCV
  – Image processing application
- **Phone Book** *July 2021*
  A simple app for storing contacts of people COMPLETED

– Tools: HTML, CSS, JavaScript and Bootstrap
– Basic Frontend application

- **Basic Text Editor** *February 2024*
  A basic text editor app COMPLETED
  – Tools: Java, Swing and AWT
  – Java GUI application with File handling system

- **Sorting Animation Application** *February 2024*
  An application visualizing bubble sort and selection sort algorithm COMPLETED
  – Tools: HTML, CSS, JavaScript and Java AWT
  – Separate two versions using Java AWT and Web technologies

- **Others**
  Some other small projects
  – Models using DL and ML
  – Analogue clock
  – GUI Calculator
  – Obstacle avoiding car
  – Edge avoiding Car
  – Simple robotic arm
  – Frontend projects

Technical Skills

- **Programming in**: C , C++ , Java , Python , Linux Shell , Visual Basic
- **Web technologies**: HTML , CSS , JavaScript , Node.js , Flask , VBScript , Express.js , Servlet , JSP , PHP , Streamlit
- **Data Structures**: Array , Stack , Queue , Linked List , Tree , Graph , Hashing , Heap
- **Algorithms**: Sorting (Mergesort, Quicksort, Heapsort, Radixsort etc.) , Searching , Asymptotic Analysis , Greedy Methods , Dynamic Programming , Graph Algorithms (Graph traversal, shortest path etc) , Randomized Algorithms
- **IoT and Hardware**: Basic Digital Electronics , Computer Architecture , Microprocessor , Arduino , Raspberry Pi
- **AI/ML**: Pytorch , OpenCV , LLMs , RAG
- **Tools**: Microsoft Office , Google Colab , Jupyter , VS Code , ChatGPT , Git
- **Database**: DBMS , SQL , PL/SQL
- **Computer Graphics, Image Processing, Computer Vision**
- **Others**: Machine Learning , Deep Learning , Data Visualization , LaTeX , Software Project Management

Key Courses Taken

•**Semester I**

– Design and Analysis of Algorithm
– Theory of Computation
– Machine Learning
– Linear Algebra and Matrix Computation
– Probability and Stochastic Process
– Basic Statistics

•**Semester II**

- Advanced Algorithm
- Blockchain, LLM, IoT
- Computer Vision
- Spectral Graph Algorithms
- Computational Complexity

Experience

- Fresher