ARNAB SINGHA

M.Sc. in Computer Science
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🌐 Portfolio

PROJECTS

- **A Comparative Study of Classification Algorithms on the EMNIST dataset:** Evaluation of ML algorithms for EMNIST dataset
  Tools: Python, Scikit-learn, Numpy, Pandas   *November 2024, RKMVERI*
  Supervisor: *Br. Tamal Maharaj*

- **Vision-Guided Robotic Manipulation:** A Computer Vision-Integrated Robotic Arm for Real-World Object Interaction
  Tools: ESP32, OpenCV, IoT, inverse Kinematics   *April 2025, RKMVERI*
  Supervisor: *Br. Tamal Maharaj*

- **Object Detection using YOLO in qemu emulated Raspberry Pi with Kafka**: Object detection in a Qemu-emulated Raspberry Pi connected to a kafka system
  Tools: YOLOv11, Qemu, Kafka, Raspberry Pi   *May 2025, RKMVERI*
  Supervisor: *Champak Dutta*

- **Chatbot: Neutron** : LLM powered chatbot
  Tools: Google Gemini, Streamlit
  February 2025, RKMVERI

- **Document Scanner:** Computer vision-based document scanner with real-time connection with mobile camera through IP webcam app
  Tools: Python, OpenCV, IP webcam
  April 2025, RKMVERI

- **Catch-It-RL:** Reinforcement Learning Agent Using DQN to play a custom 2D Catch-It game
  Tools: Python, Gymnasium, Pytorch, Pygame
  June 2025, RKMVERI

- **Other Projects:**
  - DL and ML projects, Analogue clock, GUI Calculator, Basic Text Editor, Exam Management System, Sorting Animation Application, Obstacle avoiding car, Edge avoiding Car, Simple robotic arm

COURSEWORK

- Linear Algebra and Matrix Computation
- Probability and Stochastic Processes
- Machine Learning
- Theory of Computation
- Design and Analysis of Algorithm
- Basic Statistics
- Computational Complexity
- Advanced Algorithm
- Blockchain, LLM, IoT
- Computer Vision
- Spectral Graph Theory and algorithms
- Digital electronics and Computer Architecture
- Programming in C and C++
- Programming in Java
- Discrete Mathematics and Graph Theory
- Operating System
- Data Structures
- Database Management System
- Software Engineering
- Computer Networks
- Python Programming
- Internet Technologies(JavaScript, JSP, Servlet, JDBC, JavaBeans)
- Artificial Intelligence
- Compiler Design and System Programming
- Microprocessor
- Numerical methods

EDUCATION

- **Ramakrishna Mission Vivekananda Educational and Research Institute, Howrah**
  M.Sc. in Computer Science
  📅 2024 – Present   (Sem-1) CGPA: 6.67

- **Midnapore College (Autonomous)**
  B.Sc.(H) in Computer Science
  📅 2021 – 2024   CGPA: 8.19

- **Midnapore Collegiate School**
  Higher Secondary
  📅 2019 – 2021   Score: 85%

TECHNICAL SKILLS

- **Programming Languages:** C, C++, C#, Java, JavaScript, Python, SQL, Shell Scripting, Prolog, PHP LaTeX
- **Frameworks:** Node.js, Express.js, Flask, Streamlit, OpenCv, Numpy, Pandas, Matplotlib, Pytorch, LangChain, gymnasium, sqlite, JDBC, Java-AWT, Java-Swing, Servlet, JSP, pygame
- **Tools:** Git/Github, MS Office, Oracle Database, MySql, Kafka
- **Operating System:** Windows, Linux
- **IoT and Hardware:** Basic Digital Electronics, Computer Architecture and Organisation, Microprocessor, Raspberry Pi, Arduino, ESP32

CERTIFICATES

- Online Certificate Course in Robotic Control Using Arduino, NIELIT Chennai
- Online Certificate Course in Python Programming, NIELIT Kolkata

ACTIVITY

- Placement Volunteer, RKMVERI, 2024-26

HOBBY

- Listening Music, Watching Movie, Listening Stories, Learning new things

EXPERIENCE

- **Fresher**