# Shibam Chakraborty

Computer Science Graduate & Researcher

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## EDUCATION

**BRAC University**, Bachelor's in Computer Science 2022 – 2025

- GPA: 3.40/4.0

## EXPERIENCE

**Researcher**, Research Activator Lab 2025 – Present

- Conducting research in computer vision and medical image analysis.
- Implementing hybrid architectures and evaluating performance across multiple datasets.
- Preparing experiments, analyzing results, and contributing to publications.

## RESEARCH & THESIS

**HyMaC-Net: A Hybrid Lightweight Mamba-CNN Framework with Patch Embedding for Medical Image Classification** (Undergraduate Thesis)
Designed and validated HyMaC-Net, a lightweight hybrid CNN–State-Space (Mamba) architecture for medical image classification, achieving strong cross-dataset generalization across 12 medical benchmarks while reducing parameters (≈9–20M) and computation (≈1–2 GFLOPs) through patch-based embedding, and efficient global context modeling.

**Benchmarking YOLOv11 and YOLOv12 for Peripheral Blood Cell Detection: Analysis of the impact of Model Scale and Dataset Quality** (Contributed as the 2nd Author)
Accepted at the 8th International Conference on Recent Trends in Image Processing & Pattern Recognition (RTIP2R), Morocco.

**Dual-Pipeline Bengali Lip Reading and Language Reconstruction using LLMs** (Ongoing Research)
Developing a multimodal framework for reconstructing Bengali text from silent lip-reading videos, focusing on low-resource language challenges by combining computer vision–based visual speech understanding with large language models to generate coherent Bengali words and sentences. Manuscript in preparation for international conference/journal submission.

## PROJECTS

**ML Football Match Outcome Prediction** MLFootballPred

- Built a machine learning pipeline to predict home team wins using historical international match data. Performed categorical encoding, feature scaling, and evaluated KNN, Decision Tree, and Logistic Regression models using precision, recall, and F1-score, achieving up to ≈60% F1-score on unseen test data.
- Tools Used: Python, Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn.

**Brain-Tumor Segmentation & Classification** Brain-Tumor seg-cls

- Developed and evaluated deep learning pipelines for brain tumor analysis from MRI images. Attention-UNet improved segmentation performance over baseline UNet (Dice: 0.84 vs 0.79). A joint segmentation–classification model achieved 94.7% classification accuracy, demonstrating effective multi-task learning despite minor trade-offs in pixel-level segmentation accuracy.
- Tools Used: Python, Pytorch, UNet, Attention-UNet, OpenCV, NumPy, Pandas, Matplotlib, Scikit-learn

**GhauGhau a Pet Adoption Platform** GhauGhau

- Built a full-stack web application using Next.js, Node.js, and MongoDB, featuring user authentication,

responsive UI, and RESTful backend services. Designed the complete UI and branding (logo) using Figma.

- Tools Used: Next.js, Node.js, Express.js, MongoDB, Figma, REST APIs.

## SKILLS

**Programming:** Python, C, JavaScript
**ML/DL Frameworks:** PyTorch, TensorFlow, Keras, Scikit-Learn
**Computer Vision:** OpenCV, CNNs, UNet, Attention-UNet, Vision Transformers, Mamba
**NLP & LLMs:** HuggingFace, LangChain, Tokenization, Fine-tuning, Prompt Engineering
**Tools:** Pandas, NumPy, Git, Matplotlib
**Web Development:** Next.js, Node.js, Express, MongoDB, TailwindCSS
**Soft Skills:** Public Speaking, Mentoring, Team Collaboration, Problem Solving
**Language Proficiency:** Bangla (Native Speaker), English (Professional Level).

## Awards & Achievements

- Secured per-semester CG of 3.92 + for straight three consecutive semesters
- Participated in the countries first AI Olympiad and Conference.
- National Datathon organized by CUET **[Postion 32/150]**

## CERTIFICATIONS

- **Udemy** - Machine Learning A-Z: AI, Python and R+, ChatGPT [2024]
- **Udemy** - The Data Science Course: Complete Data Science Bootcam [2025]
- **OpenCV University** - Vision Language Model (VLM) Bootcamp [2025]
- **IBM** - Project Management Fundamentals [2024]

## INTERESTS

AI for Healthcare, Computer Vision, NLP–CV Integration, Explainable AI, Competitive Gaming

## REFERENCES

**Dr. Amitabha Chakrabarty**
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