Ananta Raha

M.Sc. (Eng.) Student, Department of Computer Science and Engineering, BUET

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RESEARCH INTERESTS

Computer Vision – Medical Imaging – Neural Network Security – Multimodal Learning – Explainable AI

EDUCATION

- **M.Sc. in Computer Science and Engineering** *2024–Present*
  Bangladesh University of Engineering and Technology *Expected completion: April 2026*
  Thesis: Multimodal Fusion for Efficient and Explainable 3D Segmentation of Brain Tumor MRI (Tentative)
- **B.Sc. in Computer Science & Engineering** 2018–2023
  Rajshahi University of Engineering & Technology *Rajshahi, Bangladesh*
  CGPA **3.54** (Out of 4.00) | CGPA of Last Two Years of Graduation: **3.71**
  Thesis: Automated Detection and Segmentation of Brain Tumor Using Low-Complex RCNN and Modified UNet

PUBLICATIONS

- **Raha, A.** *Lightweight COVID-19 Detection from Chest CT-Scans Using Attention-Based CNN*. SN Computer Science, Vol. 6, 853 (2025). DOI: 10.1007/s42979-025-04403-5
- **Raha, A.**, & Tasnim, Q. S. (2025). *Efficient mulberry leaf disease detection in Bangladesh: A lightweight approach for real-time applications*. In 2025 *Int. Conf. on Electrical, Computer and Communication Engineering* (ECCE), Chittagong, Bangladesh, pp. 1–6. IEEE. DOI: 10.1109/ECCE64574.2025.11013948
- **Raha, A.**, Parvin, F., Jannat, T. (2024). *Brain Tumor Segmentation with Efficient and Low-Complex Architecture Using RCNN and Modified U-Net*. In Lecture Notes in Networks and Systems, vol 867. Springer, Singapore. DOI: 10.1007/978-981-99-8937-9_22
- **Raha, A.**, Ahmed, J., Hossain, M.S., Majumdar, S. (2025) *Defending Model Inversion Attack Using an Improved Filter-Based Approach.* (**Accepted**, *18th Intl. Symp. on Foundations & Practice of Security–Brest, France*)
- Datta, S., **Raha, A.**, Sharmin, S. (2025) *The Body's Whisper: A Privacy-Preserving, Reason-Aligned Micro-Break Assistant for Remote Workers*. (**Accepted**, *28th Intl. Conf. on Human-Computer Interaction–Montreal, Canada*)

RESEARCH PROJECTS

- Defending Model Inversion Attack Using an Improved Filter-Based Approach 2025
  Academic; *Model Privacy*–source; *Effectively prevents MI attacks without altering or re-training cloud models.*
- Resolving Ambiguity in Multi-Mapping Reads Using Context-Aware Deep Neural Networks 2025
  Academic; *Computational Biology*–source; *Misalignment reduced by* **48.98%** *(E. coli) and* **63.16%** *(B. subtilis)*
- Gamification in E-Learning: An HCI-Focused Study on Bangladeshi University Students 2025
  Academic; *Human-Computer Interaction*; *Surveyed among* **209** *students to narrow down gamified features.*
- Deep Learning Based Fully Automated Malaria Diagnosis from Full-Slide Blood Smears 2024
  Academic; *Medical Imaging*–source; *Localized CHT-based cell extraction to fully-automate classification.*
- Ultra-lightweight Approach for Efficient Mulberry Leaf Disease Detection in Bangladesh 2024
  Academic; *Computer Vision*, *Precision Agriculture*, XAI–source; *Scores* **>98.50%** *with only* **145K** *parameters.*
- Lightweight COVID-19 Detection from Chest CT-Scans Using Attention-Based CNN 2023
  Individual; *Medical Imaging*; **≈0.25s** *inference time without GPU, yet outperforms existing SOTA models.*
- Efficient Sericulture Using IoT and Machine Learning 2022
  Academic; *Precision Agriculture*, IoT; *Automates sericulture in a cost-effective, regional approach.*

LANGUAGES

Native: Bengali | Proficient (C1) in English, **IELTS Score: 7.0** (L: 7, R: 7, W: 6.5, **S: 6.5**) *June 2025*

TECHNICAL SKILLS

- Research Experience in Machine Learning & Computer Vision (***OpenCV, TensorFlow, PyTorch***, *NumPy, Pandas, Scikit-learn etc.*)
- Proficient with **LaTeX**, Microsoft Word, Excel, PowerPoint, and related software
- Mobile Application Development: ***Over 7 years*** *of experience, using Java and Android Studio*
- Practical Experience in Robotics and IoT (Internet of Things); *programming Arduino, ESP32, etc.*
- Programming Languages: *C/C++, Java, Python, JavaScript, Assembly*
- Web Development & Scraping with BeautifulSoup4, *Django, React.js, Tailwind CSS, Bootstrap, jQuery*
- Fast touch typing with 90 words per minute

OTHER PROJECTS

- MyMoney–Personal Finance Management; *Android,* ***Live on Google Play Store, 1M+ installs*** 2019–*Present*
- MorseBuddy–Decode Morse Code from Blinking Light Signals, *Android app–source* 2022
- Shopkeeper–Grocery Shop Management, *Academic project–GitHub* 2021

AWARDS

- **Fellowship–BUET MSc (April 2024)** *in recognition of academic excellence; one of the three master's students awarded in October 2024 semester; stipend for 3 consecutive semesters.*
- **Education Board Scholarship–Government of Bangladesh** *for academic excellence in the HSC (2017), SSC (2015) and JSC (2012) Examinations, respectively.*
- Participant and Finalist–National Science Olympiad, Dhaka (2014); *secured 34th nation-wide.*

CERTIFICATIONS AND CONFERENCES

- 18th Int. Symp. on Foundations & Practice of Security (FPS - 2025) *November 2025*
  Presented "Defending Model Inversion Attack Using an Improved Filter-Based Approach" *Brest, France*
- 2025 Int. Conf. on Electrical, Computer and Communication Engineering *February 2025*
  Presented research "Efficient Mulberry Leaf Disease Detection in Bangladesh" *CUET, Bangladesh*
- 2nd Int. Conf. on Big Data, IoT and Machine Learning *September 2023*
  Presented research "Brain Tumor Seg. with Efficient and Low-Complex Architecture" *Dhaka, Bangladesh*
- Regular Expressions in Python–Coursera; *Certificate: link* 2022
- Specialization: Python for Everybody–University of Michigan; *Certificate: link* 2020

REFERENCES

- Dr. Md. Shohrab Hossain
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  Email: mshohrabhossain@cse.buet.ac.bd
- Farjana Parvin
  Assistant Professor, Dept. of CSE, RUET
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  Email: farjana@cse.ruet.ac.bd