

# Rahul Kumar Kundu

27/6 Dohakula, Bagherpara-7470, Jashore, Khulna, Bangladesh

Email: [rahulkumarkundu.bd@gmail.com](mailto:rahulkumarkundu.bd@gmail.com) | [rahulkumarkundu.ece@gmail.com](mailto:rahulkumarkundu.ece@gmail.com)

[Google Scholar](#) | [LinkedIn](#) | [GitHub](#) | Contact No.: +8801601736605

## RESEARCH INTERESTS

- ✓ Deep Learning    ✓ Computer Vision    ✓ Cyber Security    ✓ Machine Learning  
✓ Explainable AI    ✓ Natural Language Processing    ✓ Generative AI & LLMs    ✓ Medical Image Analysis

## RESEARCH OBJECTIVE

ECE graduate specializing in the application of deep learning and machine learning to real-world problems in healthcare, cybersecurity, and natural language processing. Actively seeking Ph.D. opportunities to develop practically deployable, interpretable AI systems that bridge the gap between research and real-world impact.

## ACADEMIC CREDENTIALS

**Bachelor of Science (B.Sc.)** in Electrical & Computer Engineering (ECE) **January 2020 – July 2025**  
**Rajshahi University of Engineering & Technology (RUET)**  
CGPA: 3.79 out of 4.00 | Ranked 7<sup>th</sup> out of 60 students | Last 60 Credits CGPA: 3.91

## PUBLICATIONS

Google Scholar Link: [Rahul Kumar Kundu](#)

### Journal Papers

- [1] **R. K. Kundu**, H. B. Kibria, M. F. Ahamed, and M. E. H. Chowdhury, ED-Net: A Hybrid Deep Learning Framework for Precise Polyp Segmentation Integrating EfficientNetB0 with Double U-Net Architecture and Atrous Spatial Pyramid Pooling with Test-Time Augmentation,” *Biomedical Signal Processing and Control*, Elsevier. [**Under Review — 1<sup>st</sup> Revision, Q1, IF: 4.9**].

### Conference Proceedings

- [1] R. H. Prince, M. O. F. Goni, H. I. Peyal, and **R. K. Kundu**, “Beyond the Leaf: Intelligent Lightweight Disease Detection in Tea Plants with Spatial Convolutional Neural Networks and Explainable AI,” in *2025 IEEE 7th International Conference on Sustainable Technologies For Industry 5.0 (STI)*, IEEE, 2025, pp. 1–6. (**Published in IEEE Xplore**, DOI: [10.1109/STI69347.2025.11367552](https://doi.org/10.1109/STI69347.2025.11367552))
- [2] O. Jyoti, S. N. Sakib, and **R. K. Kundu**, “Advancing Cybersecurity: A Study on Phishing Website Detection Using Machine Learning,” in *2025 8th International Conference on Computer and Information Technology (ICCIT)*. IEEE, 2025. (**Accepted in ICCIT 2025**)

### Works in Progress

- [1] **MetaSeg: Metadata-Integrated Skin Lesion Segmentation:** A deep learning segmentation framework integrating patient demographic metadata through FiLM modulation for improved skin lesion segmentation across diverse patient populations. [*Model development in progress.*]
- [2] **Pragmatic-Aware Emotion Grounding (PAEG) for Bangla:** Investigating pragmatic feature loss in machine-translated Bangla emotion datasets and proposing a Pragmatic-Aware Emotion Grounding framework combining lexicon retrieval and culturally-grounded augmentation to improve LLM emotion recognition for low-resource Bangla. [*Framework design in progress.*]

## RESEARCH EXPERIENCE

### Undergraduate Thesis Research

**July 2024 – July 2025**

Supervisor: *Hafsa Binte Kibria, Assistant Professor, Dept. of ECE, RUET*

- Designed **ED-Net**, a hybrid dual-encoder-decoder combining EfficientNetB0 and Double U-Net with ASPP modules and SE-block channel attention for colorectal polyp segmentation.
- Achieved **97.13% accuracy**, **92.26% Dice**, and **91.08% IoU** on Kvasir-SEG with Test-Time Augmentation (TTA), outperforming recent SOTA models including CSwinDoubleU-Net and SwinSAM.
- Validated cross-dataset generalization on three external benchmarks (CVC-ClinicDB: 80.62% Dice, ETIS-LaribPolypDB: 77.15% Dice, PolypGen2021: 80.71% Dice), demonstrating clinical robustness under domain shift.
- Prepared and submitted the manuscript to *Biomedical Signal Processing and Control* (Q1, Elsevier); manuscript currently under review at 1st revision stage.

## Independent Research

2024—Present

- Developed an ensemble phishing detection system (XGBoost + LightGBM + CatBoost) with SHAP-based interpretability; accepted at ICCIT 2025 (IEEE).
- Developing **MetaSeg**, a multimodal skin lesion segmentation framework integrating patient demographic metadata through FiLM modulation for improved performance across diverse patient populations. [*Model development in progress.*]

## STANDARDIZED TEST SCORES

### Language Proficiency (IELTS)

8<sup>th</sup> November 2025

| Overall Band | Listening | Speaking | Reading | Writing |
|--------------|-----------|----------|---------|---------|
| 7.0          | 7.5       | 7.0      | 7.5     | 6.0     |

## TECHNICAL SKILLS

|                                |  |
|--------------------------------|--|
| <b>Programming Languages:</b>  | Python, MATLAB, C, C++, Java.  |
| <b>ML &amp; DL Frameworks:</b> | TensorFlow, Keras, PyTorch, Scikit-learn, OpenCV, pandas, NumPy, Matplotlib. |
| <b>Research Tools:</b>         | Kaggle, Google Colab, Jupyter Notebooks, Git, GitHub, LaTeX, Mendeley.       |
| <b>Software:</b>               | Visual Studio Code, Simulink, Arduino, Canva, MS Office Suite.               |
| <b>Web Development:</b>        | HTML, CSS, JavaScript, PHP, Bootstrap, MySQL, Next.js, MongoDB.              |

## PROJECTS

1. **RUET-ASSR Official Website:** Led a team to build the official website for the Astronomy & Science Society of RUET using *Next.js*, *Prisma*, and *MongoDB*. [[Link](#)]
2. **Home Automation System:** Designed an IoT-based home automation system using ESP32 with remote control via Wi-Fi, developed during ECE-3212: Peripherals & Interfacing Sessional. [[Link](#)]

## RELEVANT COURSES

- Object Oriented Programming
- Data Structure & Algorithms
- Operating Systems
- Computer Architecture & Design
- Database Systems
- Microprocessors
- Computer Networks
- Software Engineering
- Neural Network
- Digital Image Processing
- Digital Signal Processing
- ML & Data Science [[Link](#)]

## ACADEMIC AWARDS AND ACHIEVEMENTS

1. **Technical Scholarship**, University Grant Commission (UGC) — three consecutive years: 2022, 2023, and 2024, awarded to top-ranked students based on B.Sc. annual results.
2. **General Grade Scholarship** in SSC (Grade 10) and JSC (Grade 8) examinations, awarded to nationwide highest-ranked students.

## ACADEMIC LEADERSHIP & SERVICE

1. **Chair**, IEEE RUET Signal Processing Society (SPS) Student Branch Chapter (2024–2025) [[Link](#)]
2. **Vice President (Information)**, Astronomy & Science Society of RUET (ASSR) (2024–2025) [[Link](#)]
3. **Secretary, Website & CMT Management**, 2025 IEEE International Conference on Power, Electrical, Electronics and Industrial Applications (PEEIACON) (2023–2024) [[Link](#)]
4. **Webmaster**, IEEE RUET Student Branch (2023–2024) [[Link](#)]
5. **Event Management Secretary**, Astronomy & Science Society of RUET (ASSR) (2023–2024) [[Link](#)]
6. **Team Leader**, AURORA National Science Festival 2023 (ASSR) [[Link](#)]

## REFERENCES

### Hafsa Binte Kibria

Assistant Professor  
Department of Electrical and Computer Engineering (ECE), RUET  
Email: [hafsabintekibria@ece.ruet.ac.bd](mailto:hafsabintekibria@ece.ruet.ac.bd)  
Cell: +8801743289800

### Md. Nahiduzzaman

Assistant Professor  
Department of Electrical and Computer Engineering (ECE), RUET  
Email: [nahiduzzaman@ece.ruet.ac.bd](mailto:nahiduzzaman@ece.ruet.ac.bd)  
Cell: +8801763591843

### Oishi Jyoti

Assistant Professor  
Department of Electrical and Computer Engineering (ECE), RUET  
Email: [oj.ruet@ece.ruet.ac.bd](mailto:oj.ruet@ece.ruet.ac.bd)  
Cell: +8801768787593