Atique Bin Zakir

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Education

University of Dhaka Ongoing
Masters of Science in Electrical and Electronic Engineering

University of Dhaka Jan 2020 – Aug 2025
Bachelor of Science in Electrical and Electronic Engineering
CGPA: 3.72/4

Notre Dame College, Dhaka 2017-2019
Higher Secondary School Certificate
GPA: 5.00 (Science)

Skills

Programming Languages: C, C++, Assembly (x86), Python, Bash
Microcontrollers: STM32, ESP32, AVR
Tools & Platforms: Keil, STM32CubeIDE, Arduino, GDB (Debugging), Git, Linux, PyTorch
Embedded Development: Firmware Development, Debugging, Board Bring-up
Communication Protocols: UART, SPI, I2C
Hardware & CAD: Power Electronics, Sensor Integration, Soldering, PCB (Eagle), Cadence(Virtuoso)

Publications

Manuscripts in Review

- **Zakir, A. B.**, Dipto, A. R., Hawladar, N., Sarker, M. S., Arefin, F., Shormi, A. S., Ullah, S. M., Muid, K. A., & Habib, A. (2025). MAST-CloudNet: **IoT-Enabled** Acoustic Trap with **Real-Time AI** Surveillance of *Aedes*. *IEEE Internet of Things Journal* Aug 2025

Peer-Reviewed Publications

- Yeasmin, S., Dipto, A. R., **Zakir, A. B.**, Shovan, S. D., Suvo, M. A. H., Bhuiyan, M. A., Amin, M. N., Rashid, T. U., Islam, S., & Habib, A. (2024). Nanopriming and **AI** for Sustainable Agriculture: Boosting Seed Germination and Seedling Growth with Engineered Nanomaterials, and Smart Monitoring through **Deep Learning**. *ACS Applied Nano Materials*. DOI:10.1021/acsanm.4c00109 Apr 2024

Research Acknowledgements

- Arju, M. Z. B. Z., Hridi, N. A., Dewan, L., Suhaila, Amin, M. N., Rashid, T. U., Azad, A. K., Rahman, S., Hossain, M., Habib, A. (2025). **Deep-learning** enabled rapid and low-cost detection of microplastics in consumer products following on-site extraction and image processing. *RSC Advances*.
  DOI:10.1039/d4ra07991d Apr 2025

Selected Projects

MAST-CloudNet: IoT-Enabled Acoustic Trap with Real-Time AI Surveillance of *Aedes* (4th Year Undergraduate Project) Sep 2024 – May 2025

- Developed an edge-to-cloud pipeline for live *Aedes* surveillance, using a Raspberry Pi for streaming and a cloud server for YOLOv11 inference
- Implemented a YOLOv11 deep learning model for *Aedes* detection, reaching a mean Average Precision (mAP) of 0.92 on a dataset of local mosquitoes

Seedsight: An Automated Seed Monitoring System Mar 2023 – Oct 2023

- Prepared a dataset of 1000 germinated and non-germinated seed images

- Trained YOLOv5 deep learning object detection model, achieving 98% accuracy in identifying germination percentages from seed images
- Built an picamera mounted two-axis CNC machine to capture close-up high quality seed images for YOLOv5 inference using a Raspberry Pi, Arduino and GRBL

Project ARCHER: A Linux Based Cost Effective Computer System   Aug 2023 – Feb 2024
- Secured $2500 in funding and contributed to project implementation for IEEE SIGHT DU's "Project ARCHER"
- Led the software development team, tested various linux distrobutions on low-cost alternatives to Raspberry Pi (Orange Pi, Banana Pi) for similar performance

Project BeSuddho: A Water Purification System   Feb 2021 – Mar 2023
- Developed C firmware for AVR (Atmega328p) to manage sensor data acquisition and control system actuators, contributed to hardware implementation including building and debugging circuitry

Project EUCLID: Antenna Radiation Pattern Measurement Tool   Jan 2024 – Mar 2024
- Designed and implemented an automated antenna rotation device using ESP32 for the DU EEE Microwave Lab
- Developed firmware for precise NEMA stepper motor control, integrating user input from push buttons and status display on an LCD via the I2C protocol
- Enabled automated measurement of antenna radiation patterns, eliminating the need for manual intervention

Experience

Research Assistant at DU Microsystems and Nanoengineering Group   Jan 2024 – Present
- Developed an integrated IoT system comprising a CNC machine, Raspberry Pi with camera and YOLOv5 deep learning model to effectively capture close-shot high resolution pictures of seeds for germination detection

IEEE SIGHT Student Branch Chapter DU   Jan 2023 – Feb 2024
- Served as Student Activity Secretary in the Executive Committee
- Actively contributed to project management and firmware development in IEEE SIGHT funded projects

Workshops

- Conducted a workshop titled "Python 101: A Comprehensive Programming Workshop for Beginners" at   Feb 2023
  University of Dhaka
- Conducted a workshop for kids on Project ARCHER at Fab Lab DU   Jan 2024

Hobbies

Playing guitar, developing CLI tools, electronics hobbyist

References

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Dr. Md. Ahsan Habib
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