

# Azwad Fawad Hasan

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## EDUCATION

### Independent University, Bangladesh (IUB)

*B.Sc. in Computer Science & Engineering (CSE); CGPA: 3.73/4.00*

*Minor in Management Information Systems (MIS); Cum laude graduate*

Dhaka

Jan 2020 – Sept 2023

### Pearson Edexcel International Advanced Levels (IAL), Academia

*Physics, Chemistry, Mathematics; Grade: 3 A*

Dhaka

Jun 2017 – Jun 2019

### Pearson Edexcel International GCSEs (O levels/ IGCSE), Academia

*Took 8 exams in a single sitting; Grade: 8 A\**

Dhaka

Jun 2017

## PUBLICATIONS

Md Fahad Monir and **Azwad Fawad Hasan**, "Exploring SDN Based Firewall and NAPT: A Comparative Analysis with Iptables and OVS in Mininet," in *Advanced Information Networking and Applications (AINA-2024)*, L. Barolli, Ed. Cham: Springer, 2024, vol. 202, pp. 423-432, doi: [https://doi.org/10.1007/978-3-031-57916-5\\_37](https://doi.org/10.1007/978-3-031-57916-5_37).

Md Fahad Monir, **Azwad Fawad Hasan**, Md Mozammel Hoque, Tarem Ahmed, Fabrizio Granelli, "Benchmarking Network Functionality: Performance Evaluation of SDN Controllers on Different Network Functions," 2024 IEEE 100th Vehicular Technology Conference (**VTC2024-Fall**), Washington DC, USA, doi:<https://doi.org/10.1109/VTC2024-Fall63153.2024.10756803>.

**Azwad Fawad Hasan**, Md Fahad Monir and Zoheb Hasan, Tarem Ahmed "Resilience of SDN Controllers to DDoS Attacks: A Comparative Study of RYU, ODL, and OVS," in *WS19 IEEE ICC 2025 Workshop-Security 6G (IEEE ICC-2025)*, Montreal, Canada, 2025. [Accepted]

**Azwad Fawad Hasan**, Md. Fahad Monir and Khorshed Alam, "Enhancing DDoS Attack Detection through Multi-modal Fusion of Features Extracted using Deep Learning and Large Language Models (LLMs)" [On-going]

## RESEARCH EXPERIENCE

### IUB, Dept. Of Computer Science And Engineering

*Researcher Assistant (RA)*

Bashundhara, Dhaka

Sept 2022 – Present

- Implemented and validated **network middleware** (firewalls, load balancers, IDS, NAPT) in **programmable emulated environments** (Mininet, NS-3) under the supervision of [Dr. Tarem Ahmed](#). Quantified **packet loss** and **jitter** under diverse **DDoS** and **P2P** attack scenarios. Identified critical performance bottlenecks crucial for **robust and resilient network design in next-gen telecom infrastructures**
- Designed and evaluated **programmable network test beds** to rigorously benchmark and optimize **Quality of Service (QoS)** under diverse, **software-defined network (SDN)** conditions. Explored their role in **next-generation network architectures** (e.g., **6G**, **Open RAN**), focusing on dynamic network control and resource orchestration, with contributions leading to three peer-reviewed publications under the mentorship of Senior Lecturer, [Md. Fahad Monir](#)
- Developed a novel, high-fidelity, **multi-class DDoS dataset** using Mininet-based SDN emulation and *advanced packet generation (Scapy)*. Applied **rigorous feature engineering and machine learning (XGBoost, Random Forest, SMOTE)** for DDoS mitigation, achieving **99.86% accuracy** on custom data and **99.90% on CIC-DDoS2019 validation**, contributing to **intelligent network security, anomaly detection, and data-driven network management**.

## INDUSTRY WORK EXPERIENCE

### Aamra Networks Ltd.

*Programmer (ERP) - RnD & Pre-Sales*

Banani, Dhaka

March 2025 – Present, Full-time

- Collaborated in a team of six to develop and optimize critical features across **Aamra group's large-scale ERP system (HR, CRM, SCM, Expenses modules)**. Automated *Yearly Assessment workflows*, enhanced contract management, and improved *HR, BTRC reporting*, increasing data entry efficiency by **21%** and supporting a **10% revenue uplift**. Leveraged *CodeIgniter (PHP), MySQL, JavaScript*, and modern web practices to deliver scalable, high-reliability solutions with proactive bug resolution, robust validation, and smooth data migration.

## Aamra Networks Ltd.

*Executive (SWE) - RnD & Pre-Sales*

Banani, Dhaka

March 2023 – Feb 2025, Full-time

- Engineered a **robust, real-time facial attendance web application**, integrating *Flask* and *RTSP streams*. Leveraged **advanced AI models** (FaceNet, DeepFace, MTCNN, ONNX Face Detection) achieving **95% accuracy** on large video datasets. Designed a **scalable processing pipeline** (reducing time by **30%**) and a **secure dual-database system** for enhanced operational security.
- Developed "*Infiltra Watch*", a state-of-the-art **AI-powered intruder detection system** for old existing CCTV infrastructure. Achieved **91% accuracy** in real-time intruder detection and implemented a robust alarm system, significantly enhancing **security and preventing property damage** through automated threat response.

## SKILLS

**Languages:** Python, SQL, JavaScript, PHP

**Technologies and Libraries:** TensorFlow, PyTorch, Scikit-learn, Pandas, OpenCV, Flask, Django, SQLAlchemy, Numpy, Redis, Celery, Git, Streamlit, Bootstrap, Plotly.js, ApexCharts.js, YOLO, NS-3, Mininet, iPerf, SVN

**Certificates:** *Professional Google Cloud Security Engineer, KodeKloud Mastering Generative AI*

## AWARDS & ACHIEVEMENTS

**Multiple Dean's List, Honor List, and Vice Chancellor's List Awards(2020-2023):** Recognized for consistently high academic achievement throughout my undergraduate studies.

**Top Team Finalist, Innovate For Bangladesh 2021:** My work on waste recycling during the pandemic was selected as one of the top finalists in the student competition organized by Bangladesh Innovation Conclave.

**IUB 100% Merit Scholarship 2020:** Got full scholarship for being *Top 5% scorer* of Spring 2020 Admission Test.

**The Change Maker Awards 2019:** Recognized for one of the *country's best* IGCSE results.

**The Daily Star Award 2020, 2018:** Recognized for achieving top grades in A-levels and O-levels.

**Pearson Edexcel High Achievers Awards 2017:** Graduated as the highest ranked student.

## PROJECTS

### Predicting From Images | [GitHub](#)

- Explored transfer learning techniques using the VGG-16 convolutional neural network architecture on the CIFAR-100 dataset, consisting of 60,000 images across 100 classes.
- Implemented VGG-16 in PyTorch and trained the model both from scratch and using pre-trained ImageNet weights, adjusting the final layers to fit CIFAR-100 classes.
- Applied techniques like freezing convolutional and fully connected layers, comparing performance across different training approaches to enhance model accuracy.

## LEADERSHIP & SERVICE

### IUB Admission & Financial Aid Office

*Student On Duty (SOD)*

Bashundhara, Dhaka

2021 – 2023, On-Site Part-Time

- Provided administrative support and customer service for undergraduate admissions and scholarships, including handling queries, calls, and credit transfer evaluations.

### Private Tutor (Self-Employed)

*O-Level and A-Level Students*

Mirpur, Dhaka

2019 – 2023, On-Site Part-Time

- Provided personalized tutoring in Math and Science for O-Level and A-Level students in Bangladesh, helping them achieve academic success.

## EXTRA-CURRICULAR ACTIVITIES (ECA)

### Sub-Executive, IEEE Computer Society IUB Student Branch Chapter

*Managed social media, boosted LinkedIn followers by 50%, and created content strategies.*

Jul 2021 - Jul 2023

### Edge Ambassador, The Business Standard (TBS)

*Created content, partnered with university clubs, and facilitated TBS and Walton collaborations.*

Aug 2021 - Aug 2022