

# Rafat Hasan Khan

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## Education

<b>M.Sc. in Computer Science and Engineering</b>   <a href="#">Curriculum</a> University of Dhaka (DU)   QS 2025 Rank: 554th Ranked 9 <sup>th</sup> in Admission   Advisor: <a href="#">Dr. Mosaddek Hossain Kamal</a>	Paused Dhaka, Bangladesh
<b>B.Sc. in Computer Science</b>   <a href="#">Curriculum</a> Independent University Bangladesh (IUB) CGPA: 3.73/4.00   Advisor: <a href="#">Dr. Amin Ahsan Ali</a> Thesis: “Deep Focus Matting: Light-Weight Trimap-Free Portrait Image Matting”	2017 - 2021 Dhaka, Bangladesh

## Research Experience

<b>Center for Computational &amp; Data Sciences</b>   <a href="#">CCDS</a> Research Assistant (RA)	2023 - present Dhaka, Bangladesh
<ul style="list-style-type: none"><li>Research projects on Semantic Segmentation, &amp; authentication system</li><li>Advisors: <a href="#">Dr. Amin Ahsan Ali</a>, <a href="#">Dr. AKM Mahbubur Rahman</a> and <a href="#">Prof. Ashraful Amin</a></li></ul>	
<b>Artificial Intelligence and Cybernetics Lab</b>   <a href="#">AGenCy Lab</a> Undergraduate Research Student	2022 Dhaka, Bangladesh
<ul style="list-style-type: none"><li>Explored machine learning tools and libraries and participated in weekly literature review discussions that supported the completion of my thesis.</li><li>Advisor: <a href="#">Dr. Amin Ahsan Ali</a>, Mentor: <a href="#">Fahim Faisal Niloy</a></li></ul>	

## Academic Experience

<b>Coding for All Initiative</b>   <a href="#">Coding for All Initiative, IUB</a> Tutor	2023 - present Dhaka, Bangladesh
<ul style="list-style-type: none"><li>Tutored undergraduate students in the CIS-101, CSC-101 courses, covering topics about Python programming, application development, introduction to AI, Prompt Engineering, and others.</li></ul>	
<b>Department of Computer Science &amp; Engineering</b>   <a href="#">Dept. of CSE, IUB</a> Student on Duty (SoD)	2019 - 2020 Dhaka, Bangladesh
<ul style="list-style-type: none"><li>Assisted undergraduate students in the CSE-213 course, conducted review sessions on Java programming, object oriented concept, software development, and graded assignments.</li><li>Course Instructor: <a href="#">Mr. Subrata Kumar Dey</a> [<a href="#">Letter from Instructor</a>]</li></ul>	

## Honors & Awards

Received cum laude honors in the B.Sc. in CS program   IUB	2022
Received the Vice Chancellor's Award   IUB	2021
Received the Dean's Merit Award   IUB	2020
Awarded 100% scholarship for the B.Sc. in CS program   IUB	2017

## Academic Service

International Joint Conference on Neural Networks (IJCNN)	Assisted Review	2024
International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT)	Assisted Review	2024

## Selected Projects

<b>Face Liveness and Recognition System</b>   CCDS <i>Description:</i> Developed face recognition and liveness detection models for face biometric login, explored CNN methods on remote photoplethysmography and moiré patterns to prevent spoof attacks, and trained the model using data from over 50 individuals. <b>Secured 18,00,000 BDT (~\$15,000) in funds</b> from Penta Global Ltd.	2024
<b>Semantic Segmentation of Satellite Imagery of Bangladesh</b>   CCDS <i>Description:</i> The project focused on developing deep learning models for semantic segmentation of satellite imagery in Bangladesh, aiming to enhance accuracy through boundary attention techniques.	2023
<b>Weather Station</b>   <a href="#">CSC-212, IUB</a> <i>Description:</i> Developed an embedded weather monitoring system on helium balloons using an Arduino Nano with various sensor modules and a GSM module for edge server connectivity, anchored securely to 1 km from the university's premise. <b>Received best project showcase award.</b>	2019

<a href="#">Evaluation and Implementation of System of Linear Equation   CSC-470, IUB</a> <i>Description:</i> Developed program tool as part of a Parallel Programming course, utilizing CUDA API, multithreading in Java, and C with OpenMPI, while assessing performance on public datasets. <b>Acknowledged as exceptional in the course.</b>	2019
<a href="#">Data Analysis &amp; Representation System (DARS)   CSC-401, IUB</a> <i>Description:</i> An interactive web-based data visualization and analysis tool that seamlessly integrates real-time data management, leveraging ERD and BPMN for architecture planning, built using PHP, JavaScript, MySQL, and Chart.js for rich graphical displays. <b>Recognized as outstanding among others in the course.</b>	2018
<b>Competitions</b>	
<a href="#">IEEE Signal Processing Cup 2022   Regional Ranked 14<sup>th</sup> [30+ Teams worldwide]</a> Mentor: <a href="#">Dr. Sakira Hassan</a> <i>Description:</i> Explored state-of-the-art deep learning models, analyzed synthetic speech methods for data insights, and proposed a method that produced results using PyTorch, Lightning, and scikit-learn.	2022
Intra IUB Hackathon   <b>Champion</b> [50+ Teams] <i>Description:</i> Developed an Android app called “μClass” for visual class management, integrating students, teachers, and courses using the university’s internal API, with Android Studio, Flutter, and Google Firebase.	2019
National Programming Contest, IEEE Day 2018   <b>1st Runner-up</b> [120+ Teams] <i>Description:</i> As a team of two, we competed against top universities and solved 4 out of 5 problems in a limited time using C++ in Code::Blocks IDE.	2018
<b>Standardized Test Score</b>	
<a href="#">Duolingo English Test (DET)</a>   Overall Score: 120 Literacy: 120, Comprehension: 125, Conversation: 110, Production: 100	2023
<b>Relevant Courseworks</b>	
Linear Algebra (Grade: A, Above 90%), Image Processing (Grade: A, Above 90%), System Analysis and Design (Grade: A, Above 90%), Object Oriented Programming (Grade: A, Above 90%), Parallel Programming (Grade: A, Above 90%), Numerical Methods (Grade: A-, Above 85%).	
<b>Certificates and Workshops</b>	
<a href="#">JICA B-TopSE program</a>   JICA-BCC-BASIS joint initiative [Youngest among selected Trainers]	Ongoing
<a href="#">Workshop on Statistical Inference Frequentist &amp; Bayesian Estimation</a>   CCDS	2024
<a href="#">Mathematics for Machine Learning Specialization</a>   Coursera	2020
<a href="#">Open Source Software Development, Linux and Git Specialization</a>   Coursera	2020
<a href="#">Google IT Automation with Python Specialization</a>   Coursera	2020
<a href="#">Google Mobile Sites Certification</a>   Google Skillshop	2019
<b>Memberships</b>	
<a href="#">Bangladesh Computer Society (BCS)</a>   Life-Time Member	2023
<a href="#">Institute of Electrical and Electronics Engineers (IEEE)</a>   Graduate Member	2022
<b>Technical Skills</b>	
<b>Programming:</b> Python (Strong), Java (Strong), Javascript (Moderate), C++ (Moderate). <b>ML Libraries:</b> Pytorch, Scikit-Learn, Pandas, Pytorch-lighting, Ray. <b>Softwares and Tools:</b> React, Flutter, JavaFX, Git, RegEx. <b>Clouds &amp; Deployments:</b> Docker, Azure, Alicloud. <b>Platform:</b> Github, Stackoverflow, Kaggle, Colab. <b>Document Preparation:</b> Latex, Markdown, MS Office. <b>Embedding Board:</b> Arduino, Raspberry Pi, NodeMCU (ESP8266, ESP32-CAM), HackerRF One. <b>Others:</b> Linux, Vim, Bash Scripting, Open MPI, CUDA API.	
<b>Reference</b>	
Available upon request.	