Fathin Ishrak

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Career Objective:

Motivated and enthusiastic Computer Science and Engineering graduate with a solid foundation in problem-solving, seeking a challenging position to leverage and further develop technical skills. Committed to delivering effective solutions and contributing to organizational growth while advancing my professional career.

Educational Qualification:

1. **B.Sc. In Computer Science & Engineering (CSE),** 2025
   BRAC University
   CGPA: 3.30
2. **H.S.C. in Science,** 2019
   Birshreshtha Munshi Abdur Rouf Public College
   GPA: 4.33
3. **S.S.C. in Science,** 2017
   Patuakhali Govt. Jubilee High School
   GPA: 5.00

Skills:

- Programming Languages: HTML, SQL, C, C++, CSS, Python
- Assembly Languages: x86 Assembly, RISC - V
- Vision Control: Git, GitHub
- Software Engineering: Waterfall Model, V - Model, Incremental & Iterative Model, Agile methodologies, DevOps, MVC Architecture Pattern, Peer to peer Architecture Pattern, SDLC, Software testing
- Operating Systems: Windows, Linux
- Artificial Intelligence: Machine Learning, Neural Network
- Robotics & IoT: Arduino, ESP, STM, Raspberry Pi, ROS
- VLSI Design
- Quantum Computing

Research Interest:

- **Recent Research:** Multi-Level Deep Generative Model with Poisson Variational Autoencoders and Reinforcement Learning for Enhanced Intrusion Detection System.
- **Other Interested Areas:** Robotics & IoT, Embedded Systems, VLSI, Quantum Computing, Quantum Machine Learning, Artificial Intelligence, Machine Learning, Deep Learning, Neural Network, Cybersecurity.

Projects:

Research Projects:

- **Multi-Level Deep Generative Model with Poisson Variational Autoencoders and Reinforcement Learning for Enhanced Intrusion Detection System**
  - Developed a hierarchical intrusion-detection model for my undergrad thesis using a three-level Poisson VAE chain (packet → flow → session) with normalizing flows, a PPO agent for per-sample ensemble weighting, and an XGBoost meta-learner to fuse predictions. Evaluated on NF-UQ-NIDS-v2 dataset, it achieved 89.17% multiclass accuracy and strong binary discrimination (98.11% AUROC).
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/Multi-Level-Deep-Generative-Model-with-PVAE-and-RL-for-Enhanced-IDS.git

- **FIR-DEC: A Deep Embedding Clustering Model Using Convolutional Autoencoders on MNIST Dataset of Handwritten Digits**
  - Developed a deep-embedding clustering model as a solo research for CSE425: Neural Network course that combines a convolutional autoencoder with a DEC-style clustering head (implemented in PyTorch) to learn cluster-discriminative representations on the MNIST handwritten-digit dataset. Jointly optimized reconstruction and KL clustering losses and achieved an adjusted Rand index of ≈0.62, substantially outperforming a k-means baseline with improved silhouette and Davies–Bouldin scores.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/FIR-DEC_Deep-Embedding-Clustering-Model-Using-Convolutional-Autoencoders-on-MNIST-Digits-Dataset.git

Software Projects:

- **PCGenixAI: AI-Powered PC Builder Web App**
  - An advanced version of my solo project PC Builder developed for my CSE471: System Analysis and Design course. Built an intelligent web platform for PC component shopping and AI-based custom PC built recommendations with user authentication, dynamic build generation, and smart filtering using React, TypeScript, Node.js, Express.js, and Supabase**.**
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/PCGenixAI.git

- **BuX: Online Learning Platform**
  - Full-stack Laravel e-learning website with instructor/student/admin roles, course/section/lecture management, quizzes, shopping-cart and payments, dashboards and progress tracking; developed as a group project for CSE470: Software Engineering, built with Laravel (PHP), MySQL, Blade and Tailwind.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/CSE470_PROJECT_Online-Learning-Platform_BuX.git

- **Nearby Expertise: Service Provider Finder**
  - Developed a web-based platform that connects users with nearby professionals (e.g., electricians, plumbers, carpenters) using PHP, HTML, CSS, and MySQL. Created as a group project for the CSE370: Database Systems course, it features database-driven service listings, user authentication, and efficient data management for real-world application.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/CSE370-Project-Website_Nearby-Expertise.git

- **Digital Food Ordering System using x86-Assembly Language (User Interface)**
  - Developed a digital food-ordering system in x86 Assembly (EMU8086) as a solo project for CSE341: Microprocessor course. The menu-driven program supports category browsing, item selection with quantity validation, and order processing, demonstrating low-level implementation of user interaction and basic order data handling.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/CSE341-Project_Digital-food-ordering-system-at-a-restaurant-using-x86-Assembly-Language.git

Games:

- **Shoot the Circles**
  - Designed a game as a part of a solo project for CSE423: Computer Graphics course using Pygame where the main objective is to shoot the falling circle shaped objects. The game can be over in 3 ways: If a falling circle touches the shooter directly, if a player misses 3 falling circles to shoot or if a player misfires 3 times.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/Project-Game_Shooting-the-falling-circles.git

- **Catch the Diamonds**
  - This game was developed as a part of a solo project for CSE423: Computer Graphics course using Pygame, with the main goal of catching falling diamonds. As the game progresses, the difficulty increases by speeding up the falling diamonds. If the player misses a diamond, the game ends.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/Project-Game_Catch-the-falling-diamonds.git

Hardware Projects:

- **Mars Rover Prototype**
  - Designed and built a Mars rover prototype as a solo project for *CSE461: Introduction to Robotics*. The rover featured pan–tilt camera control for full directional viewing (up, down, left, right) and autonomous/basic manual navigation. Integrated a 4-DOF robotic arm for soil sample collection and an onboard weather station to measure ambient temperature and humidity. The system was powered by an ESP32-CAM**,** Arduino UNO, and Arduino Nano, and fully controlled and monitored through a custom web application.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/Mars-Rover-Prototype.git

- **Sensor-based Student Access Authentication System & Cheating Detection System during exam**
  - Built a cost-efficient sensor-based prototype smart desk as a solo project for CSE360: Computer Interfacing course using Arduino UNO. The system ensures only the authorized student can unlock and sit at a dedicated desk using RFID technology; and during the exam, detects and signals to the teacher when a student looks left/right/front/back beyond a set distance or uses a concealed phone under the desk.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/Sensor-based-Access-Authentication-and-Cheating-Detection-System-during-exam-using-Arduino.git

- **Obstacle Avoiding Car**
  - Built an autonomous obstacle-avoiding robotic car using Arduino UNO as a solo project for CSE350: Digital Electronics & Pulse Techniques course.
  - GitHub Link: https://github.com/Fathin-Ishrak-Romeo/Hardware-Project_Obstacle-Avoiding-Car-using-Arduino.git

- **Automatic Water Pump System**
  - Built an automatic water pump system as a solo project for CSE251: Electronic Devices and Circuits course using ICs and MOSFETs (without microcontrollers) that automatically activates when the water level drops below a threshold and shuts off when it exceeds a set limit, with LED indicators displaying real-time water levels.

- **Automatic Blind-Turn Traffic Management System**
  - Designed an automatic traffic management system as a solo project for CSE260: Digital Logic Design course using logic gate ICs (without microcontrollers) for blind turns on hilly roads. The system detects approaching vehicles and activates red indicators on the opposite side to warn incoming traffic, while green LEDs signal when the road is clear and safe to pass.