Iffat Jahan (Electrical and Electronic Engineer)

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Summary

Curious, hands-on problem solver with a keen interest in semiconductor technology, VLSI chip design, machine learning and app development. Experienced in both research and industry, driven to turn ideas into practical, real-world solutions. Calm and focused in critical situations, with a proven ability to work under pressure.

Education

Islamic University of Technology (IUT), Gazipur, Bangladesh — 2022 – 2026
Bachelor of Science in Electrical and Electronic Engineering (EEE) — ***CGPA: 3.36 / 4.00***

Viqarunnisa Noon School and College, Dhaka, Bangladesh — HSC 2022 | SSC 2019
Higher Secondary and Secondary School Certificates — ***GPA: 5.00 / 5.00 in both***

Undergraduate Thesis

A Study on Design and Sensitivity Analysis of Quantum-Corrected Carrier Confinement in IGZO/ITZO Dual-Channel TFTs

Undergraduate Researcher, Advanced Semiconductor Devices Lab (ASDL) — 2025 – 2026
Islamic University of Technology — *Gazipur, Bangladesh*

Publications

[J1] S. Saif and **I. Jahan**, "Probabilistic deep learning for cost-sensitive taxi dispatch: When does forecast accuracy translate into decision value?" *Expert Systems with Applications* (Elsevier, IF 9.4), under review (submitted Oct. 2026).

[C1] S. Saif, **I. Jahan**, A. M. Maisha and M. M. Billah, "6-Bit Computer Implementation with Optimized Display and Reduced T-states," *1st IUT International Conference on Core Engineering & Technology (IUT-ICCET 2024)*, Dept. of EEE, IUT, Gazipur, Bangladesh, 2024.

Industrial Training

Walton Hi-Tech Industries PLC, Gazipur — Oct 2025

Ghorashal Training Center, Narsingdi — Oct 2025

Bangladesh Atomic Energy Commission (BAEC), Savar — Oct 2025

Robi Axiata PLC, Dhaka — Oct 2025

Projects

- **Adaptive Cruise Control with Lane Change**
  - Tools & technologies used: MATLAB, Simulink
  - Built a cruise controller that keeps a safe gap to the car ahead and changes lanes smoothly.
- **6-Bit Computer (Modified SAP-1)** [C1]
  - Tools & technologies used: Proteus (simulation and PCB layout), 74-series logic ICs
  - Designed a 6-bit computer with fewer T-states and a 3-digit display showing carry and sign.
- **Tic-Tac-Toe on 8051**
  - Tools & technologies used: 8051 (AT89C51), Assembly, Proteus
  - Programmed a keypad-controlled Tic-Tac-Toe game with a two-player mode and an AI opponent.

- **Table Builder and Sorter in 8086 Assembly**
  - Tools & technologies used: 8086 Assembly, DOS interrupts (INT 21h)
  - Wrote a program that builds a data table from user input and sorts it by any column.
- **IoT Gas and Fire Detection System**
  - Tools & technologies used: ESP32, Arduino, C++, ThingSpeak, MQ-2 gas and flame sensors
  - Developed a system that detects gas leaks and fire, then starts an alarm, exhaust fan and pump.
- **Smart Home Automation System**
  - Tools & technologies used: Arduino Uno, C++, DHT11, MQ-2, ultrasonic and IR sensors, L298N
  - Built a system that runs a fan by temperature, warns of gas and dispenses water touch-free.
- **Convolution and Correlation Visualizer**
  - Tools & technologies used: MATLAB, App Designer
  - Developed an app that animates the convolution and correlation of two signals step by step.
- **Audio Pattern Detection**
  - Tools & technologies used: Python, Librosa, NumPy, SciPy
  - Created a tool that finds and timestamps every repeat of a short sound in a long recording.
- **Residential Electrical Wiring Design**
  - Tools & technologies used: AutoCAD, lumen method, load calculation, cable sizing
  - Designed the complete electrical wiring of a three-storied residential building.
- **Star-Delta Motor Starter**
  - Tools & technologies used: MCB, magnetic contactors, timer, thermal overload relay
  - Built a starter that lowers the starting current of a three-phase induction motor.

Technical Skills

Device Simulation	Silvaco TCAD: Atlas, Athena, DeckBuild, TonyPlot
IC Design	Cadence Virtuoso (layout, DRC/LVS), Xcelium (RTL), Genus (synthesis)
Programming	Python, C/C++, MATLAB/Simulink, Verilog, VHDL, Assembly (8086, 8051)
Machine Learning	Probabilistic deep learning, forecasting; NumPy, SciPy, Matplotlib, Librosa
Embedded & IoT	Arduino, ESP32, 8051 (AT89C51), PLC, I2C interfacing, ThingSpeak cloud
Circuits & PCB	Proteus (schematic capture, simulation, PCB layout), OrCAD, PSpice
Power & Machines	PowerWorld Simulator, PSAF, PSIM, AutoCAD, SCADA
RF & Telecom	Atoll, NYUSIM, Cambium LINKPlanner; RF planning, mobile/core networks
Tools	MATLAB App Designer, Figma, Git, GitHub, LaTeX

Activities and Achievements

SOLVIO AI Hackathon 2025 | Sheba Platform Nov 2025

Advanced to Round 2 with Team Code & Seek, ranking in the top 8% of 1,500 teams.

Co-Head, MATLAB Coding Contest | IEEE IUT Student Branch Aug 2025

Co-led the team that planned and ran the contest as part of Intra IUT EEE Day 2025.

References

Dr. Rakibul Hasan Sagor
Professor, Dept. of EEE, IUT
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Dr. Ashik Ahmed
Professor, Dept. of EEE, IUT
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