Ridwan Haque

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Education

Georgia Institute of Technology, BS in Computer Engineering — Aug 2023 – Expected May 2027

- **Coursework:** Computer Architecture, VLSI Design, GPU Programming, Embedded Systems, Data Structures, Digital Hardware/System Design, Object Oriented Programming, Physics II Electricity and Magnetism

Experience

Biomedical ML Researcher, GT Robotic Human Augmentation – Atlanta, GA — Jan 2025 – Present

- Upgraded PCB architecture and power delivery, optimizing signal integrity for hip-exoskeleton
- Configured 7 IMUs for sensor ablation experiments on hip exoskeleton to analyze human balance augmentation
- Engineered hierarchical data structure, 4 data visualization MATLAB functions, and GUI for ML model training,
- Analyzed biomechanical data from 24 human pilots across variable platform perturbation conditions

IT Project Manager, GT Office of Commercialization – Atlanta, GA — Aug 2024 – Present

- Optimized Airtable databases by designing a custom GUI, enabling employees to efficiently view and manage their assigned tasks, track deadlines, and collaborate, resulting in a 60% increase in task completion rates
- Programmed JavaScript automations for hiring processes, enabling application tracking, record organization, and a GUI for aggregating applicant form fields to generate 8 data metrics for departmental insights
- Delivered AV support for 5 conferences and trained 10 employees on Airtable database implementation

Astrophysics Researcher, Dept. Physics & Astronomy – Athens, GA — Aug 2023 – May 2024

- Engineered 3D simulation of the Solar System to predict future Solar Eclipses in Blender
- Programmed an interactive GUI with Python, optimizing user control and navigation by 50%
- Integrated 10 NASA Visualization Tech Apps & Development resources and utilized observational research data
- Awarded $1000 CURO Research Reward and presented at the Spring 2024 CURO Research Symposium.

Projects

AI and ML-Powered NBA Game Analysis Using Computer Vision — June 2025

- Developed a Python-based NBA analytics system for real-time game event analysis. Trained ML models to increase object detection accuracy by 90%. Implemented aerial view, team affiliation, and quantified 5 metrics (speed, passes, steals, etc.), improving data analysis efficiency by 60%.
- Tools Used: Python, OpenCV, PyTorch, ML, Lightning AI, RoboFlow API

Retro Snake Game on ARM Mbed Microcontroller — April 2025

- Built a hardware Snake game on an ARM Mbed microcontroller in C++ with 9 responsive I/O controls, audio module, and a micro-LCD display. Optimized game logic using linked list data structures. Built 2 maps, 8 sprites, 3 abilities, 4 cosmetics, 3 lifelines, and 5 menu screens.
- Tools Used: C, C++ , ARM Mbed OS, Circuit Design

Cloud-Based Cyber-Threat Defense SOC + Honeynet on Azure — Aug 2025

- Engineered a SOC/honeynet with 3 VMs and SQL databases within unsecured NSGs. Integrated Sentinel SIEM and configured 14 KQL alert queries and 4 geoIP heatmaps. Tracked 150 brute-force incidents in 4 days from 6,000+ global auth attempts. applied security hardening resulting in 90% decrease in incident reports
- Tools Used: KQL, Azure, Microsoft SQL Server/Sentinal/Defender

Dynamic Frontend App Developer Portfolio with React and Tailwind CSS — May 2025

- Built a responsive frontend portfolio website with advanced UI/UX, featuring 30 Framer Motion animations and 20 interactive elements, plus system preference-based dark/light mode via React Context API. Integrated a functional contact form (React Email, Resend API), and deployed to Vercel with firewall-enabled security.
- Tools Used: React, Next.js, TypeScript, Tailwind CSS, Framer Motion, Context API, Vercel

Arduino-Powered Piano Light Visualizer/Learning System API July 2025

- Engineered an Arduino Uno–based embedded system translating live MIDI from a 49-key digital piano into a real-time light show on a 144-LED strip. Designed a stable circuit with resistors and capacitors for 5V/4A power integrity, and developed modular C++ firmware enabling universal MIDI compatibility and a piano tutor mode.
- Tools Used: C++, Arduino IDE, Midi bridge, Circuit Design

Air Traffic Control LED Peripheral Visualization System April 2025

- Co-developed an embedded LED interface using memory-mapped registers on an FPGA dev board, enabling real-time control of 10 LEDs via a 16-bit protocol to simulate airway status (open/closed) and speed limits via brightness. Contributed to pattern generation logic and demo code for an air traffic control API.
- Tools Used: Intel Quartus Prime, FPGA, VHDL, Assembly, DE10 Board

Technical Skills

Languages: Java, Python, C, C++, C#, JavaScript, TypeScript, HTML, CSS, VHDL, Verilog, Assembly, SQL, KQL

Technologies: .NET, Microsoft SQL Server, Intel Altera Quartus Prime, EasyEDA, Airtable, Raspberry pi, Arduino, Esp32, Mbed OS, Matlab, Unity3D, Oscilloscopes, Azure, AWS, GCP, Docker, Git, VS Code, Pytorch, Framer Motion, Tailwind CSS, React, next.js