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Md Hamidur Rahman Khan

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Education

Lappeenranta, Finland **LUT University** **Sept 2024 - May 2027**

- **Major:** Computational Engineering, B.Sc.
- **Certificate (Minor):** Software Engineering

Work Experience

Web Developer **Give Bangladesh Foundation** **Sept 2023 - Present**

- Collaborated internationally with Awake Youth Initiative to develop a fundraising website that supports the African underserved slum communities in Nairobi, Kenya. Developed blogs, articles, landing pages, donation and marketplace pages.
- Leveraged knowledge in Full Stack Web Development, Javascript, Git, Figma for UI/UX Design, SEO, and Google Analytics.

Coder and Trainer **Tesla Lab** **Sept 2021 - Aug 2023**

- Designed educational materials and took workshops about integrated circuits, embedded systems, internet of things, and drones.
- Built educational Java and Python games/projects like spell checkers and pong games to reinforce the interactive programming knowledge of the students.
- Leveraged knowledge in Java, Python, Git, Robotics and Embedded Systems, Game Development, and Quadcopters.

Activities

National Coach **World Robot Olympiad (WRO)** **Jan 2023 - Dec 2023**

- Successfully led a team of 3 in the Future Innovator segment through the national round, mainly focused on the robotic system, software design, hardware construction, business analysis, and technical presentation.
- Guided two national teams' participation in international competition rounds, one team achieved an impressive, first time in the history of Bangladeshi participants, a silver award out of 451 global teams at WRO '23 Panama.

President, Robotics **Notre Dame Information Technology Club** **Aug 2019 - June 2021**

- Mentored 45+ national robotics/project teams, and took 14 workshops along with 40+ robotics-oriented classes to train more than 150+ students in high school
- Designed and built a national curriculum oriented teaching module for the my school's ICT department: a combined demonstration of clock pulse generators, logic gates, flip flops, registers, binary counters, and a 7-segment display on a breadboard.

Personal Projects

Tethr Network Tower Position Optimizer Using Machine Learning ***Python, C++***

- Developed a robotic system that uses ML to optimize 5G network tower locations to solve cellphone signal abruptions.
- Integrated a custom-built drone and an automated LIDAR-based ground robot to automate the process of data collection.
- Incorporated non-parametric and density-based Mean Shift clustering algrorithm, and Gradient Descent for optimization.
- Used YoloV8 for object detection and Jetson Nano for onboard computing to improve accuracy of the automated ground robot.
- Desinged a ground station using Tkinter to defined the robot path, load the data, and visualize the results.
- Utilized: Python, C++, Scikit-Learn, OpenCV, YoloV8, Pandas, Raspberry Pi, Jetson Nano, ROS, FastAPI, Tkinter.

Block Meter Blockchain-Based Electricity Billing System ***Python, C++, Solidity***

- Invented an electricity billing system that eliminated non-technical losses by 100% and ensures transparency and immutability.
- Won a Silver Medal in SDG 12 national teams from 44 countries at the International Blockchain Olympiad 2022 (Hong Kong).
- Secured Bronze Medal as the youngest developer to secure top national position in the Bangladesh Blockchain Olympiad 2022.
- Utilized: Python, C++, Solidity, PHP, Javascript, Ethereum, IPFS, BigChainDB, AES Encryption, ESP32, ThinkSpeak.

Assistive Device for Visually Impaired People prototype text-to-braille Glove for digital reading ***C++***

- Developed a tactile feedback system embedded in a glove to emulate Braille chars on fingers, translating texts from digital sources.
- Became a national finalist in the NASA Space Apps Challenge 2022 by integrating this glove into an educational space arcade game.
- Utilized: C++, Python, Arduino, ESP-32, Tacile Feedback Motors, Type-C Charging, BLE & WiFi Communication, 3D printing.

Social Media Bot Automated Social Media Interactor and Data Scraper ***Python***

- Developed a bot that automatically interacts with Facebook and Instagram to increase user engagement and scrapes data.
- Currently writing a paper with researchers at University of Kassel and Technical University of Dortmund on Political Propaganda Cycle using the data collected by the bot from the political parties on the social media platforms.
- Designed a user-friendly GUI for easy interaction with data scraper using CustomTKinter for improving the debugging capabilities.
- Utilized: Python, Selenium, BeautifulSoup, OpenCV, Pillow, CustomTKinter, Matplotlib, Sqlite3, Pandas.

Spectre Bot & Spectre OS Line Follower Robot with custom operating system ***C++***

- Spectre bot is a fully custom advanced line follower robot capable of achieving a maximum of 5m/s speed on track.
- Spectre OS is a custom operating system designed to provide advanced control and debugging capabilities for line follower robots.
- Secured champion position in the International Tech Carnival-DRMC 2020 with Spectre Bot.
- Utilized: C++, Arduino, ESP-32, TCRT5000 Sensors, PID controllers, OLED graphics, gear/servo motors, PCB designing, 3D printing.

Personal Website My portfolio for showcasing other skills & projects (hamidurrk.com) ***Typescript***

- Built real-time client-side physics simulation world & intergrated modern scroll-triggered animations using Framer Motion & GSAP.
- Utilized: Next.js, React.js, Typescript, Tailwind CSS, Framer Motion, GSAP, physics.js, Lenis, SCSS, Vercel.

Skills

Software	Proficient: Python • Typescript • C++ Familiar: Java • C • Javascript • PHP • Solidity • SCSS • R • SQL • Solidity • HTML/CSS
Technologies	Git • Selenium • Pandas • Scikit-Learn • Next.js • React • MongoDB • Firebase • Flask • Tailwind CSS • Figma • Matlab
Hardware	Aruduino • Raspberry Pi • Teensy • ESP-32 • STM-32 • Advanced sensors • BLDC & Geared motors