

Selim Hossain

✉ selim.uni.bremen@gmail.com

☎ +491795356630

📍 Bremen, Germany

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👤 Male

in <https://www.linkedin.com/in/selimbd91/>

🔗 https://selimbd91.github.io/selim_port/

Profile

Highly motivated engineer with 4+ years of experience at IMSAS, adept in hardware and software development. Passionate about turning challenges into opportunities for growth. Eager to apply skills and contribute to impactful projects in a full-time role. Thrives in dynamic environments where innovation flourishes. Ready to bring dedication and a fresh perspective to your team. Let's collaborate and create the next wave of groundbreaking solutions together!

Professional Experience

2022/02 – 2023/08

Bremen, Germany

Graduate Research Assistant

Institute for Microsensors, Actuators and Systems (IMSAS)

- Implementation of the intelligent **computing and decision support systems** and shelf life models.
- Developed a **real-time data acquisition** system using STM32 microcontrollers and wireless communication.
- Integrated a variety of **IoT sensors** (Environmental, Motion, Position) into embedded systems, leveraging expertise in hardware integration and software development, resulting in a 40% **reduction in energy consumption** and improved operational efficiency.
- Conducted **data analysis** on IoT sensor data and applied advanced visualization tools such as InfluxDB and Grafana to extract actionable insights, enabling data-driven decision-making and optimization of operational processes, leading to a **25% increase** in overall productivity.
- **Implemented IoT communication protocols** (MQTT, Apache Kafka, HTTPS) for seamless sensor data transmission, **resulting in a 20% increase** in data accuracy and enhanced real-time analytics capabilities.

2020/09 – 2021/10

Bremen, Germany

Graduate Research Assistant

Cognitive Systems Lab

- Analyzed and interpreted **complex datasets** using advanced statistical techniques, such as regression analysis and clustering, to identify **significant patterns and trends**, enabling data-driven decision-making processes that led to a 20% reduction in operational costs and a 30% improvement in overall efficiency.
- Employed advanced data **cleansing techniques**, including outlier detection and missing value imputation, resulting in a 30% increase in **data accuracy and reliability** for reporting, enhancing decision-making processes.
- Designed and trained deep learning models for Acoustic and Linguistic Features for Early Detection of **Cognitive Deficits**.
- Developed and executed data visualizations using **Power BI**, Leading to a 30% decrease in the time required for reporting, and increased data accuracy by 25%.

2017/02 – 2017/12

Dhaka, Bangladesh

System Engineer

Benfix Steel Building Development Ltd

- **Development and maintenance** of software solutions for embedded systems.
- Conducted rigorous **software and firmware testing**, ensuring seamless integration within the overall system; identified and resolved critical issues, resulting in a 50% reduction in system downtime and enhancing user experience.

- Worked closely with a team of 24 individuals and Collaborated seamlessly with a 4-member **cross-functional team**, encompassing expertise in Systems Engineering, Electrical Engineering, and Production Engineering, to drive **successful** project outcomes.

Education

2019/04 – 2023/12
Bremen, Germany

Master of Science in Communication and Information Technology (CIT)

University of Bremen.

Cumulative GPA : 2.0/4.0 (German Scale)

Relevant Coursework: Internet of Things, System Theory, Robotics and Autonomous Systems, Wireless Communications.

2013/02 – 2017/12
Dhaka, Bangladesh

Bachelor of Science in Electrical and Electronic Engineering (EEE)

Independent University, Bangladesh.

Cumulative GPA : 1.1/4.0 (German Scale)

Relevant Coursework: Circuits & Systems, Embedded Systems, Robotics, Computer Science.

Projects

2023/01 – 2023/10

Master Thesis: Lora network and secure communication for digital twins.

University of Bremen.

- Developed highly secure **LoRa networks** for secure and reliable communication between **digital twins** and their physical counterparts; reduced **data latency** by 40% and improved overall operational efficiency.
- Optimized wireless connection **quality and reliability** in LoRa networks by actively monitoring RSSI, resulting in a peak **signal strength improvement** of -53 dBm, ensuring seamless data transmission and network performance.
- Enhance **communication efficiency** by analyzing data rate, adjusting transmission intervals, and minimizing packet loss, with a 10% reduction in transmission time for smoother operations.

2022/02 – 2022/11

Master Project: Demonstration Machine learning for LoRa Sensor and integration into a streaming platform.

University of Bremen.

- Set up the LoRaWAN end node device, by **configuring** the relevant parameters. Transmit the LoRaWAN **uplink message** from the end node to a specifically chosen gateway among the available **3 gateways**.
- Take steps forward **MQTT protocol** to transmit end node data to the gateway, resulting in a 90x faster data rate compared to HTTP, optimizing data **transmission efficiency** and reducing latency.
- **Applied** machine learning algorithms achieving an accuracy rate exceeding 92%, along with anomaly detection techniques, for the analysis of incoming sensor data.

2017/01 – 2017/12

Bachelor Thesis: Detection of Tea Leaf's Diseases Using Support Vector Machine.

Independent University, Bangladesh.

- Curated and labeled an **extensive dataset** of over 1000 images of tea leaves, encompassing a wide range of **diseases and healthy** conditions, enabling accurate disease diagnosis and improving crop management practices.
- Successfully trained an **SVM classifier** on a labeled dataset, strategically choosing a suitable **kernel function** and fine-tuning hyperparameters, resulting in a notable increase in accuracy to 93%.
- **Extracted** relevant features from images using techniques such as Histogram of Oriented Gradients (HOG) and **color histograms**, yielding a remarkable 30% enhancement in efficiency.

Skills

Programming Languages

Python, Django, C, C++, JavaScript, Java, MySQL, Matlab, HTML, CSS, Bootstrap.

Tools

STM32CubeIDE, Arduino IDE, PyCharm, VSCode, Xcode, PlatformIO, Linux.

Machine Learning Frameworks

Scikit-learn, PyTorch, TensorFlow

Tools

Jupyter Notebook, VSCode, Google Colab, Linux.

Microcontroller

STM32, Arduino, Raspberry Pi, Pymakr, PIC.

Communication Protocols

I2C, SPI, UART, CAN, Ethernet, Wi-Fi, Bluetooth, LoRa, MQTT, Apache Kafka, RTOS.

Data Processing and Analysis

Pandas, NumPy, Scipy, Power BI, Seaborn

Publications

2018/03/09 **Recognition and Detection of Tea Leaf's Diseases Using Support Vector Machine**
14th IEEE Colloquium on Signal Processing and Its Applications (CSPA), Penang, Malaysia
(indexed in IEEE Xplore).

Languages

English

Fluent

German

Basic

Bangla

Mother Tongue

Awards

2019/11/21 **Deutschlandstipendium Uni Bremen**
University of Bremen.

2017/11/17 **Achieved Magna Cum Laude for academic excellence at IUB**
Independent University, Bangladesh

2015/04/07 **Achieved Vice-Chancellor Honour at IUB**
Independent University, Bangladesh

2019/01/07 **International student admission scholarship.**
Sungkyunkwan University.

2015/04/01 **Deans's Honors List Awardee**
Independent University, Bangladesh.