Selim Hossain

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Portfolio

Professional Experience

Feb 2022 – Aug 2023
Bremen, Germany

Graduate Research Assistant
Institute for Microsensors, Actuators and Systems (IMSAS)

- Computing and Decision Support Systems.
- Real-time Data Acquisition
- Integrated a variety of IoT sensors
- IoT communication protocols
- Wireless sensor networks

- *Keywords:* **STM32, C, C++, Gateway, ThingsNetwork, MQTT, UART, RTOS.**

Feb 2022 – Aug 2023
Bremen, Germany

Graduate Research Assistant
Institute for Microsensors, Actuators and Systems (IMSAS)

- Intelligent **Computing and Decision Support Systems**.
- Real-time **Data Acquisition** System Using **STM32 MCU**.
- Integrated IoT sensors into **embedded systems.**
- Wireless sensor networks for **remote monitoring.**
- Implemented **IoT communication protocols** (MQTT, Kafka, I2C, UART, SPI, LoRa).

Keywords: *STM32, C, C++, LoRa Gateway, ThingsNetwork, MQTT, UART, RTOS.*

Nov 2020 – Oct 2021

Graduate Research Assistant
Cognitive Systems Lab

- Applied **Python languages, machine learning algorithms**, and advanced analytics techniques to enable the predictive modeling of **large data sets**.
- Implemented advanced **data cleansing techniques**, leading to a 30% improvement in the accuracy and reliability of the data.
- Designed and trained **deep learning models** for Acoustic and Linguistic Features for Early Detection of **Cognitive Deficits.**
- Designed and executed **complex SQL** queries to extract data from multiple databases, resulting in a 25% reduction in data processing time.
- Data visualizations with **Power BI, Scipy, and Seaborn.**

Keywords: *Python, ML, OOP, Deep learning, Data Cleaning*

Feb 2018 – Mar 2019

Python (Django) Developer.
Oscillosoft

- Creating and executing frameworks for storing configuration data in a **database** for the Web Application Out of the Box (OOTB) through **Django Framework.**
- **Serialization** of data from the Web Server.
- Creating user-friendly front-end interfaces for the Web App using **Django templates, HTML, and CSS**.
- Integrated a **MySQL database** into an existing application, improving data storage and retrieval efficiency by 20%.

Keywords: *Python, Django, MySQL, HTML and CSS*

Skills

Programming Languages
C, C++, Python

Communication protocols
LoRa, MQTT, UART, SPI, I2C, Wi-Fi, Kafka,Ethernet

Tools
STM32CubeIDE, ArduinoIDE, VSCode, PyCharm, Xcode, Linux, Git, LT Spice, Proteus.

AI & Machine Learning frameworks
PyTorch, TensorFlow, Scikit-learn, Keras, Beautiful Soup

Data Processing and Analysis
Pandas, Numpy, Scipy, Power BI, Seaborn, Matplotlib

Microcontrollers
STM32, Raspberry Pi, Pymakr, Arduino, PIC

Operating Systems
Windows, Linux, RTOS

Programming Languages
Python, C, C++

Web Application Framework
Django, HTML, CSS, Bootstrap

Tools
Jupyter Notebook, VSCode, Google Colab, MySQL

Projects

Jan 2023 – Oct 2023

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

- Developed a secure communication between LoRa networks and digital twins, making data transfer faster by 40%. Also, I made devices talk to each other efficiently using specific communication protocols.

Keywords: *C++, Nucleo, LoRaWAN Gateway, Sensors, RSSI, Digital Twins, Packet Loss*

Feb 2022 – Nov 2022

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

- Set up a Raspberry Pi with an RN2483 module to transmit temperature and humidity data to a LoRaWAN gateway. Analyze the received data using machine learning.

Keywords: *Raspberry Pi, Arduino, MQTT Protocol, ThingsNetwork, LHT-65*

Jan 2017 – Dec 2017

Bachelor Thesis: Detection of Tea Leaf' s Diseases Using Support Vector Machine.
Independent University, Bangladesh.

- Collected a big set of tea leaf pictures, both healthy and sick. Trained a computer program to recognize if a tea leaf is healthy or diseased, reaching a high accuracy of 93%. Improved efficiency by 30% using advanced techniques to understand important details in the pictures.

Keywords: *Image preprocessing, Machine Learning, SVM, Data Visualization.*

Education

Apr 2013 – Nov 2017
Bremen, Germany

MSc in Communication and Information Technology (CIT)
University of Bremen
Cumulative GPA : *2.0/4.0(German Scale)*

Feb 2013 – Dec 2017
Dhaka, Bangladesh

BSc in Electrical and Electronic Engineering
Independent University, Bangladesh.
Cumulative GPA : *1.1/4.0(German Scale)*

Languages

English *(Fluent)* • **German** *(Basic)*

Publications

09 Mar 2018 **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).

Awards

Deutschlandstipendium Uni Bremen
University of Bremen.

Magna Cum Laude for academic excellence
Independent University, Bangladesh

Vice-Chancellor Honour at IUB
Independent University, Bangladesh