

**INTERNSHIP REPORT ON REAL-TIME DATA MONITORING SYSTEM**

**BY**

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This Report Presented in Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science in Computer Science and Engineering

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**DAFFODIL INTERNATIONAL UNIVERSITY**

**DHAKA, BANGLADESH**

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## APPROVAL

This Internship report titled “Internship Report on Real-time Data Monitoring System”, submitted by **Showrav Dutta Ankur**, ID No: 153-15-6707 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **29 of January, 2023**.

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## DECLARATION

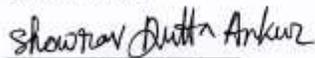
I hereby declare that, this internship report has been done by me under the supervision of **Chowdhury Abida Anjum Era, Lecturer, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this internship report has been submitted elsewhere for award of any degree or diploma.

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I would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, I must acknowledge with due respect the constant support and patients of our parents.

## **ABSTRACT**

My internship's primary objective is to get me ready for the real world of work. These IoT-focused internship experiences provide an opportunity to determine whether a particular professional field is similar to an IoT field. I have developed employable skills like cooperation, correspondence, and attention to detail thanks to this industrial training. It has shed light on the professional development practice environment of the internet of things (IoT) industries. I learned more about my field and industry during my internship at IoTixLab. The theoretical knowledge I learned in class gained value when I applied it to my work, which will help me decide if this is the right path for me. Prior to going to IoTixLab, I had no clue about the IoT world and the workspace, cooperation, or working technique. I have gained a lot of knowledge about real-world solutions and the working environment of an IoT-based industry since joining the team as an intern and continuing to work there. I was able to acquire knowledge of how to be relevant and helped acquire and improve my abilities as a result of this industrial initiative. I've learned how to communicate professionally and how respond to constructive criticism. It also helped me believe that I'm more important than I think I am, which helped me boost my confidence. I worked on a lot of parts with the IoTixLab team, like device configuration and analysis. In this report, I'll represent the functioning system, philosophy, and useful encounters that I have gained from my temporary position.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

From a mission advancement standpoint, an IOT-based internship provides practical work experience to examine individuals' interests and develop proficient skills and abilities. Students at Daffodil International University (DIU) have the wonderful opportunity to include an internship as part of their bachelor's degree. I am fortunate to be studying at DIU, which provides me with the opportunity to finish my internship. The desire was great, and now that this training situation is nearly over, I must acknowledge that it was a wonderful event. This internship's report focuses on the IoTixLab real-time data monitoring system. This internship report covers all of my successful research and development activities during my internship.

### 1.2 Motivation

I will try to find positive reasons to do this internship before I start it. I will solicit the opinions of all of my well-wishers and receive their positive feedback. I've always wanted to work for a technology company, and especially my seniors and teachers advised me to follow my heart. I am also participating in this internship to acquire new skills and abilities.

### 1.3 Objective

I had been assigned to IoTixLab to configure and analyze for the internship program in order to meet the requirements of the department of computer science and engineering



in the Faculty of Science and Information Technology at Daffodil International University. The primary objective of this internship is to perform the exercises, gain an in-depth understanding of the workplace environment and relationships, and connect with me in the workplace. It would assist me in completing a path toward personal and academic advancement. In addition to the overarching objective, the specific job objective is outlined below to describe the presentation in the workplace that results from the expansion of reliable information and certainty.

- To improve interpersonal and communication abilities in administrative settings.
- To devise strategies for gaining a competitive advantage.
- To be an organization-profitable resource by committing to positive perspectives.
- To fulfill the halfway requirement for the bachelor of computer science and engineering program at Daffodil International University.

#### **1.4 Introduction of Company**

IoT (Internet of Things)-based remote monitoring solutions are the primary focus of IoTixLab. Our journey began with the goal of facilitating in-depth research on agriculture, methodology, and the environment. As a result, our first product, an IoT data logger, was born to get monitoring data. It was made to collect data on temperature, air quality, water quality, groundwater level, and air quality. It was determined that a better and more effective industry is required to preserve, empower, and improve the mother environment. Then, we turned our attention to industries, with the goal of making industrial growth easier by streamlining production lines while maintaining the environment's equilibrium. As a result, industrial parameters like flow rate, humidity, temperature, the fluid level in tank and storage, utility consumption, and vibration began to be monitored. AI-based insights and monitoring of these parameters can encourage growth while minimizing waste and maximizing profits.

## **1.5 Report Layout**

The entire report consists of five chapters. In the report, the plan is summarized that five parts. The following is a brief synopsis of the layout:

IoT fundamentals are briefly discussed in the first chapter. I'll talk about the goal of our goals and the expected outcomes of the internship. In the second chapter, I discuss the background of my internship company, including its product and market position, vision, goal, and organizational structure. Chapter 3 highlights the responsibilities: Projects and Activities In chapter 4, I discuss the skills learned through Smart Plan Reflections. In chapter 5, I'll talk about the discussion, my conclusion, and the possibilities for a future career.

## **CHAPTER 2 ORGANIZATION**

### **2.1 Introduction**

In 2017 IoTixLab started with a vision to data acquisition and remote monitoring services. IoTixLab is a startup company focused on providing IoT (Internet of Things) based environmental, meteorological, agricultural and industrial. This company provide hardware and software to assist you in data-driven decision making. Company products cover online sensors, dataloggers, gateway, IoT platform and analytics software to monitor anything in real time. Our solutions let you remotely and continuously monitor air, soil, liquid parameters or other environmental conditions. IoTixLab is pioneering research-oriented product development for remote sensing and monitoring using IoT (Internet of Things) based technology.

### **2.2 Product and Market situation**

The most recent tech startups in Bangladesh focus on the IoT sector, specifically implanted data acquisition and remote monitoring services. IoTixLab is one of these startups. An Internet of Things (IoT) data logger/IoT gateway is our main product. Our creative planning, research and development, and production teams work tirelessly to present cutting-edge ideas that meet the needs of advertising. Real-time monitoring of environmental, meteorological, agricultural, and industrial data forms the foundation of our primary research. The various fields of data monitoring are our target market. IoT-based data service providers constitute our primary rivals. Our objective is to be Bangladesh's best provider of comprehensive data-driven software and hardware solutions with a strong global presence. With our technologies, we hope to make a positive impact on people's lives. In order to realize our vision, our main challenge is to raise awareness of environmental and industrial data monitoring issues.





### **2.3 Target Group**

To remain competitive and successful, every business, establishment, and organization must learn how to use computers and technology because the world is constantly changing. The Internet of Things (IoT) framework and information-checking administration offices ought to be necessary for all work environments and abilities for all skilled, large-scale, and commercial enterprises. IoTixLab is proceeding with the appropriate initiatives to satisfy these requirements. With a bold vision of the future, our vision statement ought to support the work that I do. The goal of IoTixLab is customer and employee satisfaction. the provision of IoT farm services to every person for the advancement of humanity and the world.

### **2.4 SWOT**



Figure 2.4.1: SWOT Analysis

### 2.4.1 IoTixLab's Strength:

To better manage this business, each organization has some strengths. Strength refers to qualities that can be used to achieve any goal. Similar to other organizations, IoTixLab possesses the following strengths:

- The main strength is skilled management.
- Positive regulatory committee and monthly performance evaluations for everyone.
- An improved working environment for both employers and employees alike.
- Improved practice of communication skills.

IoTixLab provides hardware and software to support data-driven decision-making, enabling it to operate continuously and successfully.

#### **2.4.2 IoTixLab's Weaknesses:**

Every organization has a flaw that prevents better management of this business. Therefore, organizations must locate and address those issues as soon as possible. A weakness is something that prevents an individual from achieving any goals. IoTixLab, like every other organization, has a few flaws, which are outlined below:

- Poor use of technological resources
- Absence of client character information.
- Each service lacks promotional activities.

#### **2.4.3 IoTixLab's Opportunities:**

There are opportunities for improving this company like every other organization. As a result, the organization must locate those individuals and work to make them its strength as soon as possible. An external circumstance that contributes to achieving any organization's goals is an opportunity. It may have both positive and negative aspects. Try to transform it into strength. Like other organizations, IoTixLab offers the following possibilities:

- Acquiring additional managerial expertise and experience.
- Improving customer service and cultivating stronger relationships
- Giving preparation to workers about the most recent mechanical asset use, making them proficient.
- Giving employees better wages and different advantages to rouse them to work.

#### 2.4.4

#### IoTixLab's Threats:

Every organization faces threats that make it difficult to run this business more effectively. Therefore, the organization must locate those and attempt to resolve the issue as soon as possible. A threat is an external circumstance that prevents the organization from achieving its goals. It may be of a negative nature. Make an effort to see it as a weakness. As with other businesses, IoTixLab faces the following threats:

- There are some organizations in the IoTixLab area that provide the same service.
- Implications for local politics.
- IoT's recent development and technological advancement.

#### 2.5

#### Organization Structure:

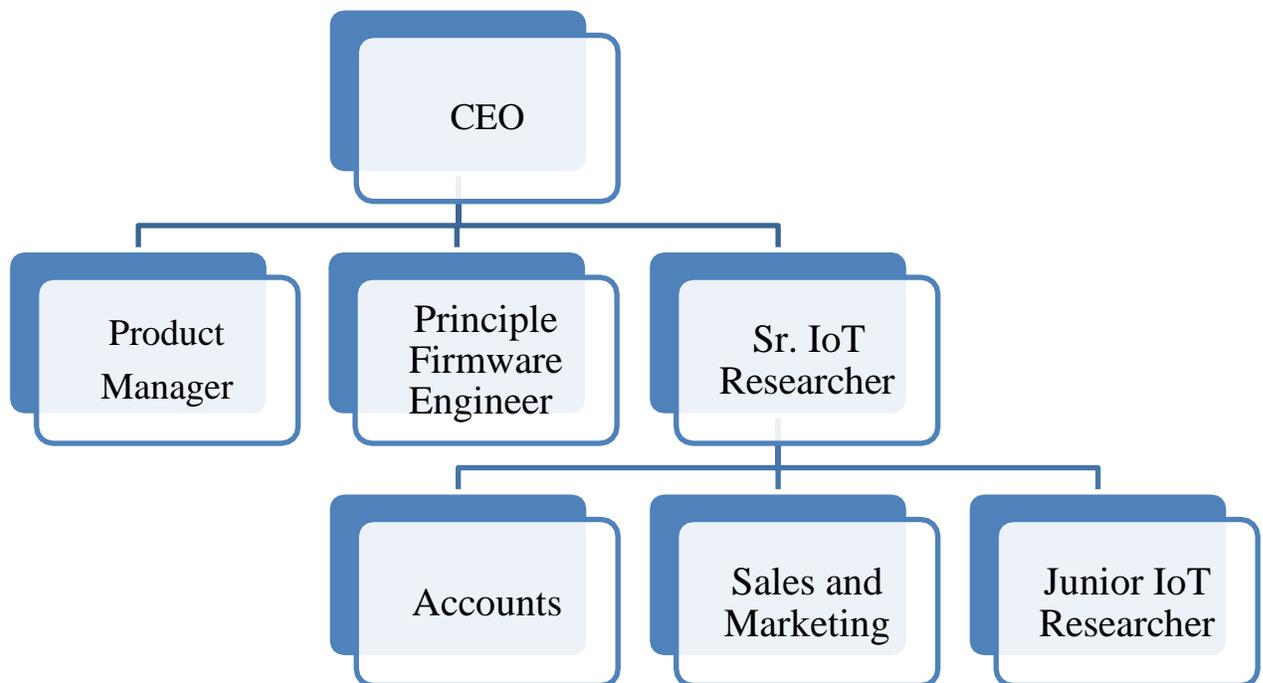


Figure 2.5.1: Organization Structure

## **CHAPTER 3**

### **TASKS, PROJECT AND ACTIVITIES**

#### **3.1 Daily Task and Activities**

- Analysis data monitoring system.
- Configure and set up the device.
- Testing the device.
- Setting up an inground monitoring station.
- Taking care of issues in the field observation.

#### **3.2 Events and Activities**

My internship project is about real-time data monitoring systems (weather stations, groundwater level monitoring, surface water level monitoring) in the time allotted for tasks and activities. I had to learn about device setup, configuration and testing data. I had to find out about the checking gadget field execution. During my internship, I worked on and contributed to a portion of three distinct real-time projects. I'm currently chatting with some organizations about a few real-time data monitoring systems.

##### **3.2.1. About Datalogger/IoT-gateway “Enviro Sampler”**

The "Enviro-Sampler" data logger/IoT gateway is a powerful finished product that was designed and developed by IoTixLab, Bangladesh. The IoTixLab research and development team worked tirelessly for three years to achieve it. The product makes it easier to monitor remotely in real-time. It is a complete solution for data acquisition, storage, visualization, analysis, and download.

Key Features:

It has

- IoT Enabled.
- Local storage.
- RS485 Modbus.
- Real-time clock.
- GSM and GPS Communication system.

Specification:

- Power Supply :12v-DC
- Solar Power Capabilities.
- Build in GSM,
- Real-time Clock.
- Flash Memory.

Competitive Advantages:

- Rugged Industrial Grade.
- Fault-tolerant Telemetry.
- Customizable.
- Surge, lightning and ESD protection.
- Most affordable and High accuracy.
- Continuous data acquisition in the Cloud.
- Data visualization and download from anywhere.
- Data-driven decision making.



Figure 3.2.1: Datalogger/IoT-gateway “Enviro Sampler”.

### **3.2.2 Common Working principle:**

In this section, I'll talk about our device working principle and show how our monitoring station works. For real-time data monitoring main device (IoT gateway/Datalogger) is connected to a power expansion board and the power expansion board is connected to the required sensors. Then the data is gathered from the sensor's signal by the IoT gateway or data logger device. The GSM-based telemetry system is then used by the data logger device to transmit this data to the cloud platform. Users can visualize, analyze, and download data from any location after sending it to the cloud platform.

Working process:



Figure 3.2.3: Common Working principle.

### 3.3 Project Task and Activities

I'll talk about the three main internship projects in this section. Surface water level monitoring, weather station level monitoring, and groundwater level monitoring are all examples of these. The monitoring station was set up at the intended location, the

device was configured, and the data connectivity to the cloud platform was tested as part of my task and activities.

### **3.3.1 Groundwater level monitoring setup**

To begin monitoring the level of groundwater, a specific location for installation is chosen by the client. That is where the monitoring station is set up. The device box and the necessary sensors are the two main components of that monitoring station. Three sections make up the device box: Power Expansion Board (works as a midway between the data logger device and sensors by connecting both), an IoT Gateway/Datalogger device (works as the main device), and a Power Management Board (works as a midway between the solar charged batteries and the main device by providing specific power voltage). We also set up a 10 watts solar panel with the device box for charging batteries and have power backup capacity for up to 15 days without being charged. The main device (IoT passage/Datalogger) gathers data from all sensors and sends that information to the cloud server. A Pressure Transmitter Sensor was used in this case for measuring groundwater level. We also used a rain gauge (rainfall measurement sensor) known as “Tipping Bucket Gauge” as per client requirement. The submersible liquid level transmitter works on the premise that the static pressure on the sensor is inversely proportional to the liquid's height. As a result, it is possible to estimate the amount of liquid by estimating the sensor's tension.

# How it works....

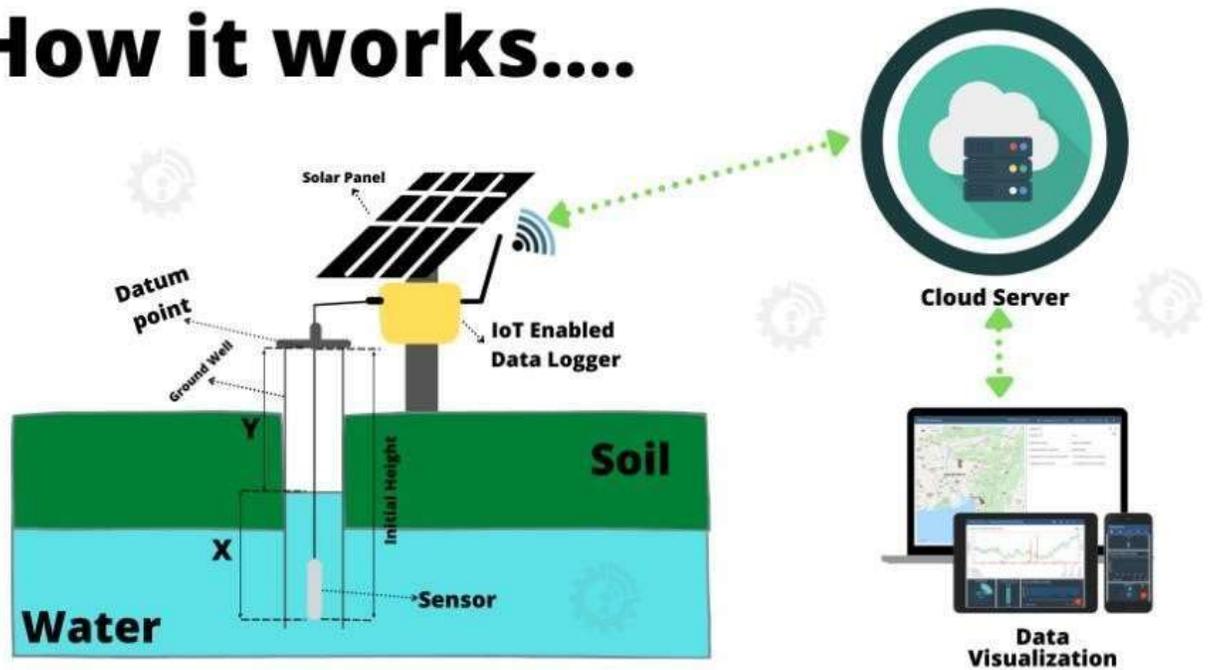


Figure 3.3.1: Working process of ground water level monitoring.

Sensor specification:

- Range: On Demand.
- Accuracy:  $\pm 0.3\%$  (Customizable).
- Temperature range: 0-60°C.
- Cable material: Polyethylene.
- Protection level: IP68.
- Cable length: 5 to 1100 meters.



Figure 3.3.2: Pressure Transmitter Sensor

#### **3.3.1.1 Configuration and testing the device:**

We must configure the device to collect the required data after setting up the monitoring station. The device can read JSON config text from memory. There are two string main devices trying to read one after the other. One string named “String configStrSystem” is used for device system configuration and the other one “String configStrSensor” is used for sensor configuration. The JSON string text has been written as a key-value pair. The key for each is used to set the required value. After that, we used the "Arduino IDE" platform to execute the system code. After that, tests are performed to see whether the device can accurately read the sensor data or not. Additionally, we verify the device's ability to transmit real-time data to the cloud platform. After the confirmation, the system code is finally uploaded to the main device in hex code format.

#### **3.3.1.2 Data visualization:**

Finally, the device can now provide monitoring services and display data in the cloud platform in the following manner.

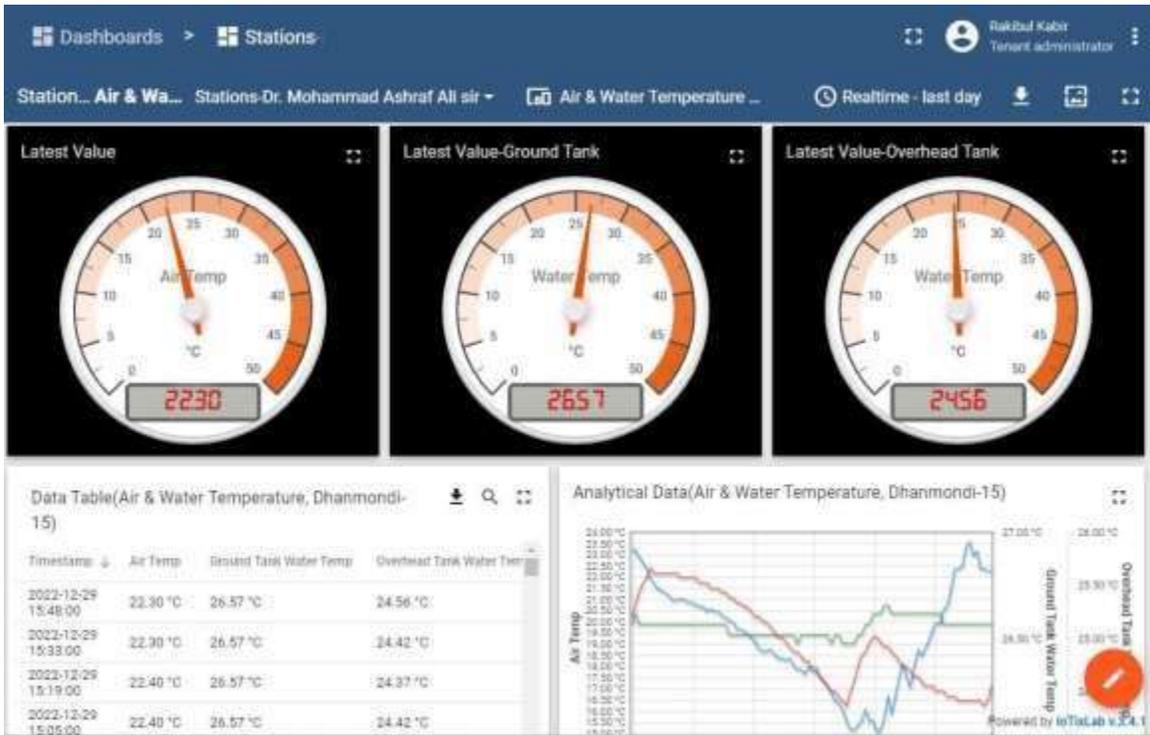


Figure 3.3.3: Groundwater level data visualization.



Figure 3.3.4: Groundwater level monitoring station setup on field.

### 3.3.2 Weather monitoring station setup

The weather monitoring station can monitor rainfall, solar radiation, air pressure, temperature, and humidity, as well as the direction and speed of the wind. Here, an air temperature-humidity sensor, a wind direction, and a wind speed sensor are installed for measuring the following parameters like pressure, temperature, humidity, speed, and direction. A rain gauge (tipping bucket) sensor is also connected to measure rainfall. A single datalogger/IoT gateway connects all sensors, consistently collecting data and sending it to the cloud platform within the allotted time frame.

Sensor specification:



Figure 3.3.5: Weather monitoring sensors

Air Pressure, Temperature and Humidity sensor

- Temperature:  $-40\sim 80^{\circ}\text{C}$ ; Humidity: 0%-100%RH;
- Accuracy:  $\pm 0.5^{\circ}\text{C}$ ( $25^{\circ}\text{C}$ );  $\pm 3\%$  RH( $5\%$  RH- $95\%$  RH, $25^{\circ}\text{C}$ );
- Ingress Protection: IP65

Air Pressure:

- Measuring Range: 0~120Kpa
- Accuracy  $\pm 1.5\text{Kpa}@25^{\circ}\text{C}$  75Kpa

- Ingress Protection: IP65
- Working Temperature: -20~60°C
- Working Humidity: 0%-80%RH Response time  $\leq 1s$
- Stability  $\leq 0.1Kpa/y$

#### Wind Direction Sensor:

- Material: carbon fiber
- Measurement range: 8 directions
- Accuracy:  $\pm 3^\circ$
- Resolution:  $1^\circ$
- Starting wind speed:  $\leq 0.5m/s$
- Cable: Standard: 0.8m
- Other Operating environment: Temperature -35°C~60°C
- Humidity  $\leq 100\%RH$ , No condensation
- Defend grade: IP64

#### Wind Speed Sensor

- Material: carbon fiber
- Measurement range: 0~45m/s 0~70m/s
- Accuracy:  $\pm(0.3+0.03V)$  m/s (V: real-time wind speed)
- Resolution: 0.1m/s
- Starting wind speed:  $\leq 0.5m/s$
- Cable: Standard: 0.8m
- Others operating environment:
  - Temperature -35°C~60°C
  - Humidity  $\leq 100\%RH$ , No condensation

#### 3.3.2.1 Configuration and testing the device:

After the monitoring station has been set up, the procedure for configuring the device is very similar to the one before it. The device can read JSON

config text stored in memory. Two strings are being read sequentially by the main device. The method for configuring the device system configuration remains unchanged. We have to configure three different types of sensors here. The sensor configuration string is called "String configStrSensor." For Each sensor, we have to set the required key and value. Then the system code was executed by "Arduino IDE" platform. The device is tested for data accuracy and sending ability to the cloud platform. Finally, we uploaded the hex code formation system code to the main device. The monitoring data can now be seen in the cloud platform.

### 3.3.2.2 Data visualization:

Data is shown in the following manner:



Figure 3.3.6: Weather monitoring station data

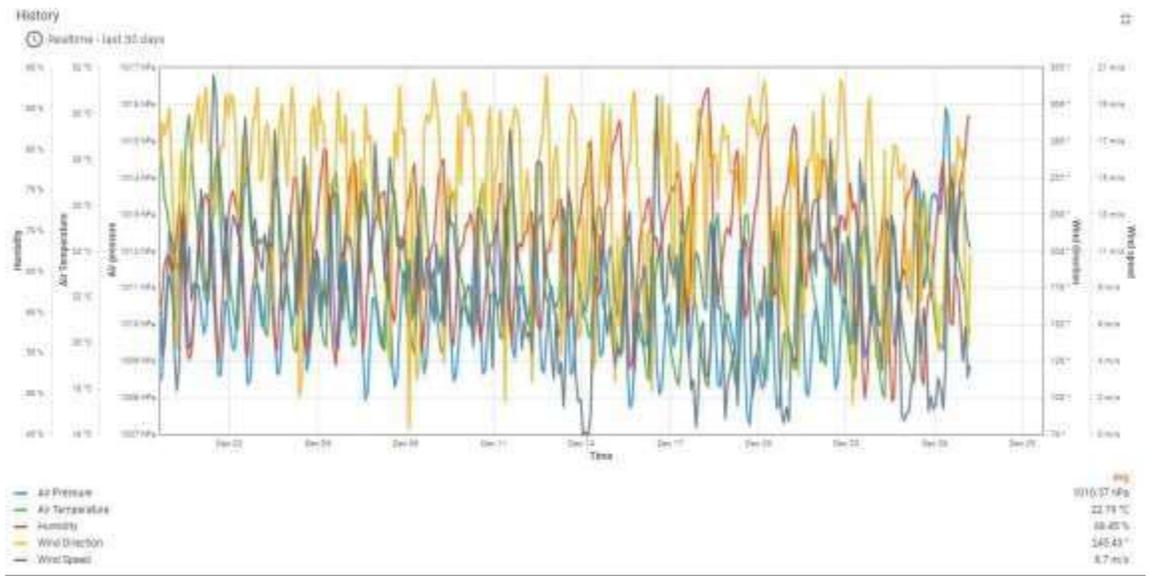


Figure 3.3.7: Weather monitoring station data graph.



Figure 3.3.8: Weather monitoring station setup

### 3.3.3 River surface level monitoring

To monitor the river surface level we use a radar level sensor(non-contact). Radar level sensor(non-contact) uses wireless sensing technology to detect motion by figuring out the object's position, shape, motion characteristics, and motion trajectory. It works by the "Time of flight" principle using the speed of sound. The transmitter divides the time between the pulse and its echo by two, and that is the distance to the surface of the material. IoT gateway/data logger can be used then to transmit the data to the server.



Figure 3.3.9: Radar level sensor

Sensor working process:

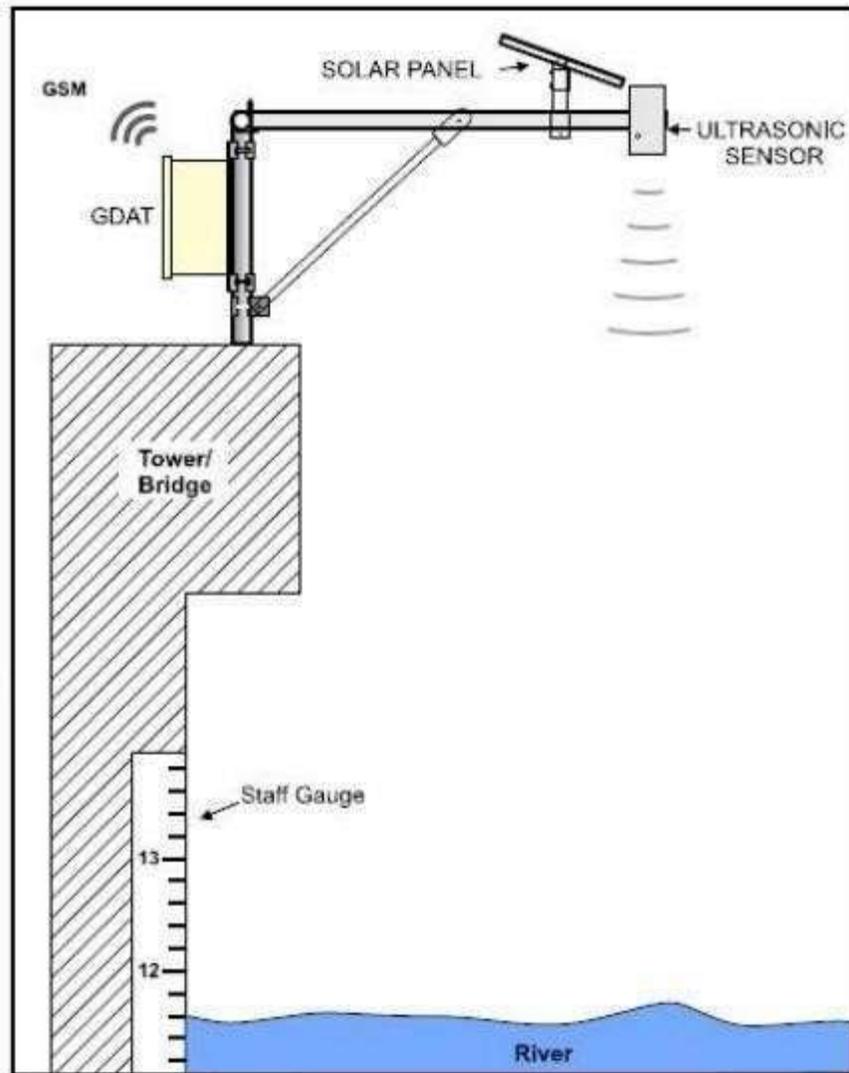


Figure 3.3.10: Radar level sensor working process

Specification:

Range: 30/50/70 m (Customizable)

Accuracy:  $\pm 0.3\%$  (Customizable)

Working temperature:  $-40$  to  $+80^{\circ}\text{C}$

Power consumption: Maximum is 0.15W

Shell: Cast aluminum, IP6.



Figure 3.3.11: River Surface level monitoring station.

### 3.3.3.1 Data visualization

After the sensor configuration, the device can now provide monitoring services and display data in the cloud platform in the following manner.

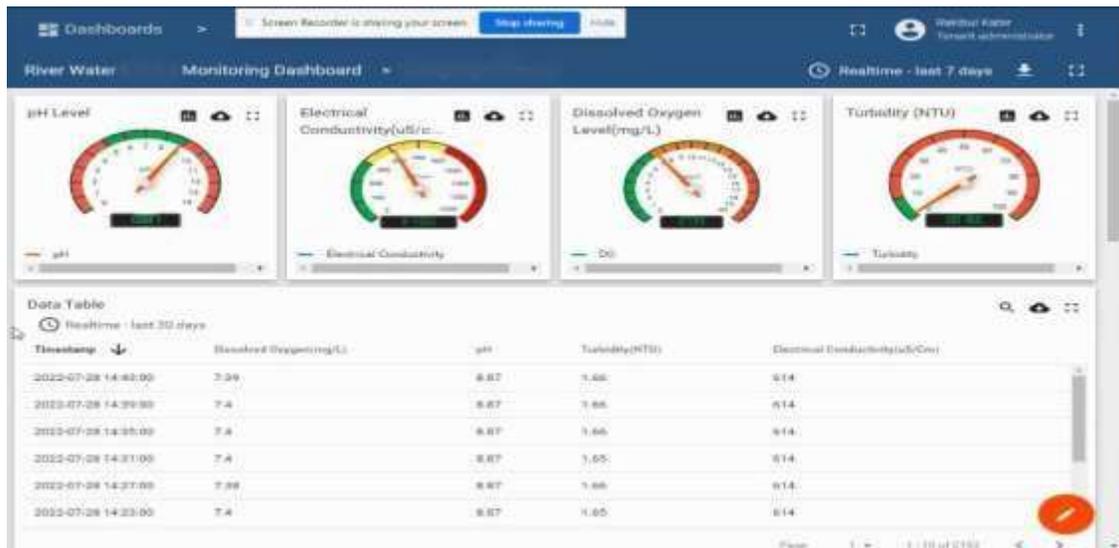


Figure 3.3.12: River Surface level monitoring data.

### **3.4 Challenges**

We are aware that the officers are extremely busy, but they sincerely cooperated with me while I was in my position. I once restricted access to some data for confidential reasons while grouping information. I have invested sufficient time energy in learning the fundamental IoT and furthermore found out about different sensors. In this research and project work, I've had to deal with a lot of difficulties. At first, it was challenging for me. But for the time being, I was able to overcome the challenges and obtain solutions thanks to my superior's clear instructions. The main issue was when we set up the device completely, but there were also occasional issues with cloud-platform connectivity and data accuracy. We experienced network issues on occasion. With the assistance of my senior and additional research, we ultimately solved the issues. As a result, I completed my task of integrating data monitoring into the project as a whole.

## **CHAPTER 4**

### **COMPETENCIES AND SMART PLAN**

#### **4.1 Competencies Earned**

Competencies Acquired Completing assignments, completing all project components, and acting with honesty and integrity are all considered competencies. By working well under minimal supervision, it may demonstrate accountability, and they can trust you to complete your work on your own. Having personal accountability means adhering to a set of values.

- **Ambition:**

I'm looking for a new position and cautiously make the objective on the resume and introductory letter mirror my ongoing desires. Define a long-term strategy for my professional career in this position, such as a series of desired promotions and the short-term steps to achieve them. I might try frequently volunteering for projects, joining a professional organization, becoming certified in this field, or enrolling in continuing education classes for personal development as I build my reputation.

- **Communication:**

Being a good listener, which can be practiced by making eye contact and not allowing the other person to collect their thoughts even during pauses or breaks in the conversation, is often the first step in effective communication. Our capacity to self-explain is another component of communication. If this was a problem for me in a group setting like a meeting, I might try asking for important conversations to

take place in a calm, focused environment. It might prepare some notes beforehand to assist me in explaining everything. Finally, staying upbeat and helpful when making suggestions or providing feedback to others may be part of effective communication.

- Delegation:

Many work projects require multiple team members to work together. Skills in delegation enable me to select other coworkers to assist me, allowing me to manage my workload and successfully complete the project. If I want to be promoted to a position where I would be in charge of other people, I need to demonstrate this skill exceptionally well. Trust in others' abilities to work well and appreciation for their contributions to the team are the foundations of delegation. It can also foster a sense of community and cooperation.

- Flexibility:

The term "flexibility" refers to my willingness to adjust my work schedule or priorities in the event of a project change. The majority of projects begin with extensive pre-planning outlining the anticipated goals, objectives, and tasks. My capacity to adjust when things change shows my obligation to the result and expectations, and it shows my inventiveness when the venture needs new arrangements.

- Stress Management:

Keeping a healthy work-life balance and remaining productive and focused requires maintaining a healthy stress level. An employer might be interested in his ability to deal with stressful situations like deadlines or assignments that must be completed quickly. People who are able to deal with stress better are more likely to stay focused and organized in their work. I use the following strategies to deal with stress at work:

- 1.If there are persistent concerns regarding members of my team or my assignments, speak with a manager or supervisor.
2. Find some methods of relaxation that I can use at work, like going for a short walk outside or practicing meditation or breathing techniques for a few minutes.

- Teamwork

In workplaces where teamwork is common. My capacity to collaborate effectively on projects will be extremely valuable. My dedication to the company's mission and the project's stated objectives can be evaluated by employers. Teamwork entails sharing credit for professional success, communicating milestones and completed tasks, and meeting deadlines that affect others people's work.

## 4.2 Smart plan

As a computer engineering student, I'm learning a lot of different languages and studying subjects like:

- C
- C++
- Arduino IDE
- Basic electronics.
- Data Analysis
- Devices configure
- Testing & device setup
- File documentation

I gain knowledge that will be helpful to me in my future career during my internship. I successfully completed a project with a group. At the moment, I intend to learn computer engineering and apply it in the real world.

### **4.3 Refection**

As a student intern, I want to promote practical embedded engineering expertise. It becomes necessary to expand one's engineering job expertise. During my time at this job, I learned about real-time data monitoring systems designed for environmental and industrial processes. My entry into this position will enable me to make a contribution to the job market. It makes it easier for skilled tricks and visits to be performed. finally acquiring the knowledge necessary to join a skilled team.

## **CHAPTER 5**

### **CONCLUSION AND FUTURE CAREER**

#### **5.1 Discussion and Conclusion**

Conclusion Bangladesh currently leads the ICT industry by a significant margin. In order to grow Bangladesh's Information and Communication Technology industry, the government has taken some necessary steps. It is the foundation for "Digital Bangladesh" in the future. Studying computer science and engineering can help you become an IT expert. At IoTixLab, I have the wonderful opportunity to finish this post on the real-time data monitoring system. It was a wonderful opportunity for me to participate in an internship and expand my career options. It offers me a legitimate extension to be told and I'm extremely thankful to them.

#### **5.2 Future plan**

My internship objective is to develop a solid understanding of the real-time data monitoring system. Configuration of the data logger device and the monitoring station. A successful internship is beneficial for gaining work experience. The course is excellent and offers tremendous opportunities in today's IOT-based industry and other software-related fields. My future scopes will be after an entry-level position

- To work with IT based company.
- Device configure, setup and testing.
- Data Collection works.
- Possibly can work as an IOT research engineer.
- Possibly can work as a cloud-web development.

## **APPENDIX**

### **Appendix A: INTERNSHIP REFLECTION:**

- [1]. Enviro Sampler- A datalogger or IoT-gateway.
- [2]. Pressure Transmitter Sensor- Groundwater Level Monitoring Sensor.
- [3]. configStrSystem- Configuration String for System.
- [4]. configStrSensor- Configuration String for Sensor.
- [5]. JSON- JavaScript Object Notation.

## **Appendix B: COMPANY DETAIL**

IoT (Internet of Things)-based remote monitoring solutions are the primary focus of IoTixLab. It was launched in 2017 to provide services for remote monitoring and data acquisition. Their journey began to facilitate in-depth research on agriculture and the environment. As a result, their first product, an environmental data logger, was born. After that, they turned their attention to industries, to make industrial growth easier by streamlining production lines while still maintaining the environment's equilibrium. This organization gives equipment and programming answers to help you in information-driven navigation. Online sensors, dataloggers, gateways, IoT platforms, and analytics software for real-time monitoring of anything are included in the company's offerings. Clients can monitor air, soil, and liquid parameters as well as other environmental, meteorological, agricultural, and industrial conditions remotely and continuously with their solutions. Subsequently started the observing of modern boundaries like stream rate, dampness, temperature, level of liquid in tank and capacity, utility utilization, vibration, and so forth. AI-based insights and monitoring of these parameters can encourage growth while minimizing waste and maximizing profits.

### **Company Profile (Head Office):**

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Email: [info@iotixlab.com](mailto:info@iotixlab.com)

## REFERENCE

- [1] <https://www.semrush.com/blog/IoT> data monitoring-analytics-10-reports-and-insights-that-really-matter
- [2]. Y. Wada, D. Wisser, M. F. P. Bierkens, Global modeling of withdrawal, allocation and consumptive use of surface water and groundwater resources.
- [3]. <https://iotixlab.com/liquid-level-monitor>
- [4] [https://www.researchgate.net/profile/Sazzad\\_Hossain17](https://www.researchgate.net/profile/Sazzad_Hossain17)
- [5] [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3918133](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3918133)
- [6][https://www.nec.com/en/global/csr/eco/pdf/IoTbased\\_River\\_Water\\_Level\\_Monitorin\\_System.pdf](https://www.nec.com/en/global/csr/eco/pdf/IoTbased_River_Water_Level_Monitorin_System.pdf)
- [7] <https://bdnews24.com/science/ofquxf2gvq>
- [8][http://teacher.buet.ac.bd/akmsaifulislam/publication/ICWFM2017\\_Flash%20Flood%20Danger%20Level\\_Abstract.pdf](http://teacher.buet.ac.bd/akmsaifulislam/publication/ICWFM2017_Flash%20Flood%20Danger%20Level_Abstract.pdf)
- [9] <https://water.ca.gov/Library/Modeling-and-Analysis/Modeling-Platforms/Integrated-Water-Flow-Model>
- [10] [https://en.wikipedia.org/wiki/Environmental\\_monitoring](https://en.wikipedia.org/wiki/Environmental_monitoring)
- [11] [https://en.wikipedia.org/wiki/Data\\_logger](https://en.wikipedia.org/wiki/Data_logger)

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