Real Time IoT Based Water Quality Monitoring System

Group Members: Muhammad Faizan & Attiq Ur Rehman

Supervisors: Dr. Safeer Hyder

Objective:

Develop a real time IoT based water quality monitoring system that reduces the import cost, improve the local capacity building and provides a feature to monitor water quality via android app and alert through email.

Introduction:

The developing countries like Pakistan are still facing with the problem of water pollution. The dirty and messy water causes various types of diseases such as dengue, cholera and malaria etc. to human beings. Besides the human beings the water pollution is also dangerous for animals and agriculture. Therefore, for the socio-economic growth of the country a system is required that monitor the quality of water.

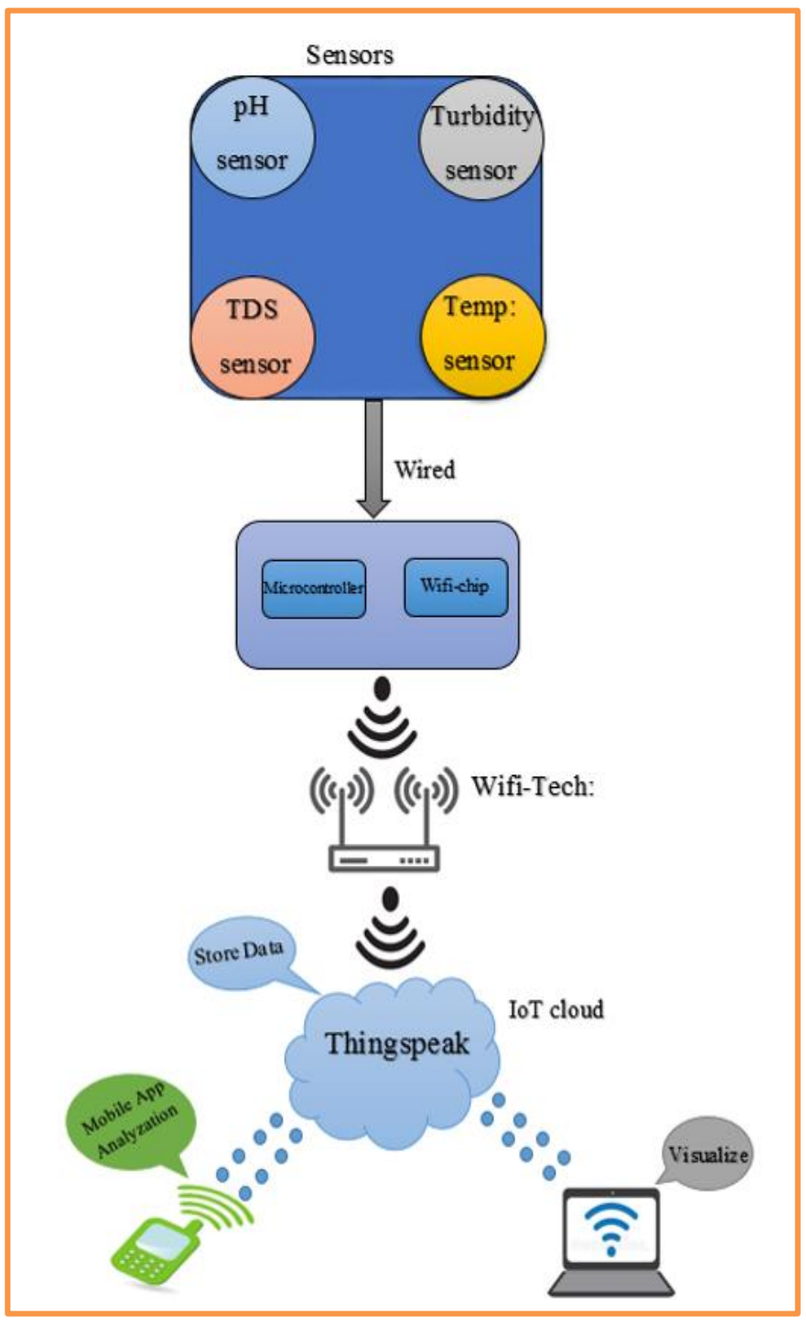
Problem Statement:

The traditional water quality monitoring is not reliable. People used to take samples from the water bodies and then tested them in laboratories. This resulted in more cost, more man power, and more time. The major issue was that real time data could not be obtained. Because of these drawbacks modern methods should be used now.

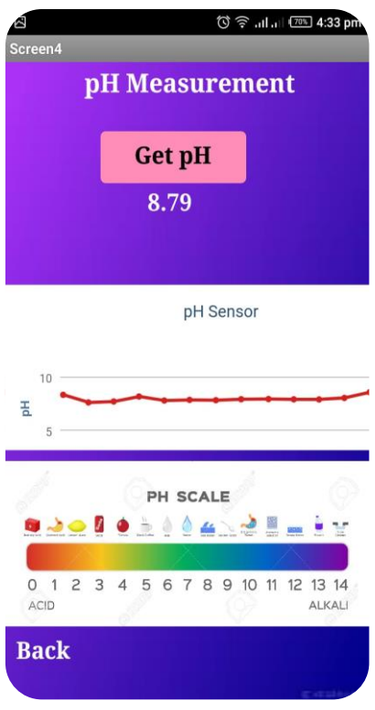
Proposed Solution:

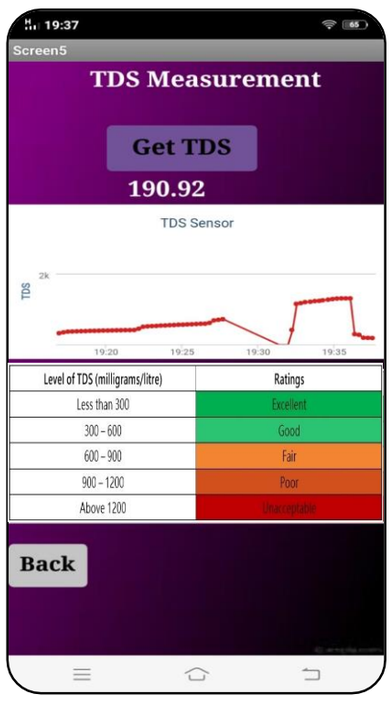
The proposed system consists of 4 major stages.

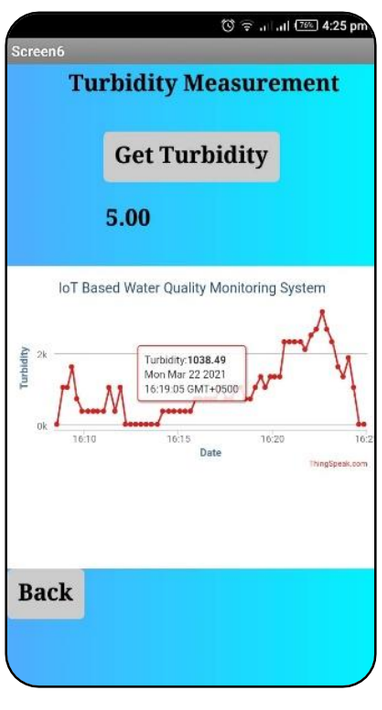
- **Sensing stage**
  - At the sensing stage the four sensors are used that sense the parameters pH, Turbidity, TDS and Temperature of water
- **Data acquisition stage**
  - In this stage the ESP32 microcontroller acquired the sensors data and compute according the program burn in it
- **Wireless data transmission to IoT cloud stage**
  - The computed data is send to the IoT cloud ThingSpeak wirelessly using the Wi-Fi technology
- **Visualization and Monitoring stage**
  - In the last stage we can monitor the water quality via the ThingSpeak dashboard, an Android App, and 16x2 LCD

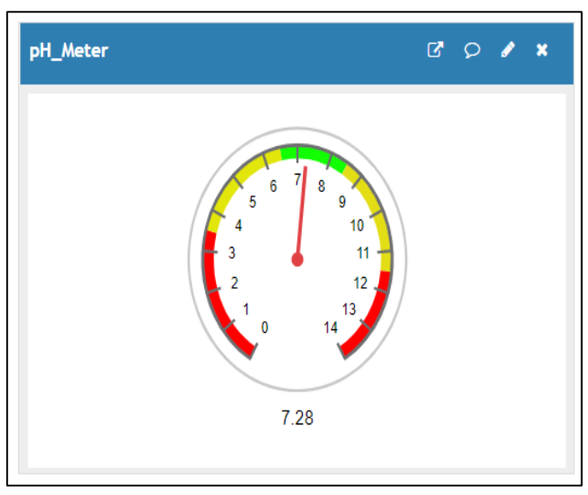


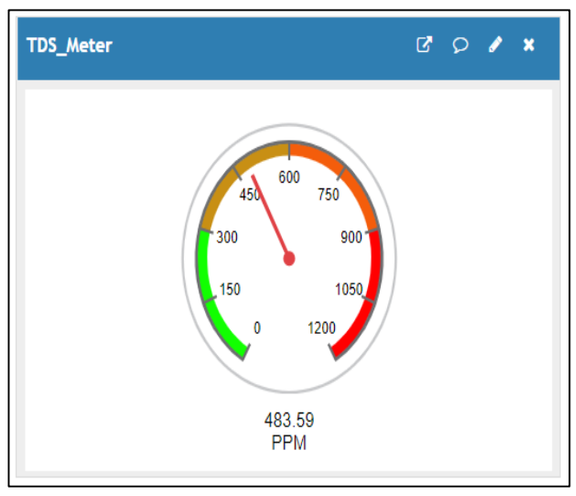
Results:

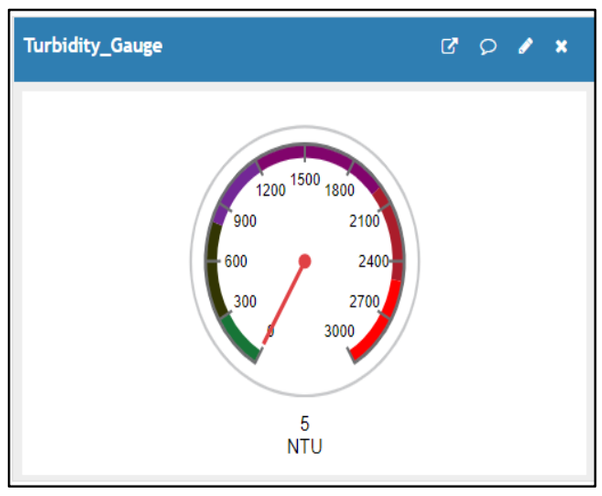


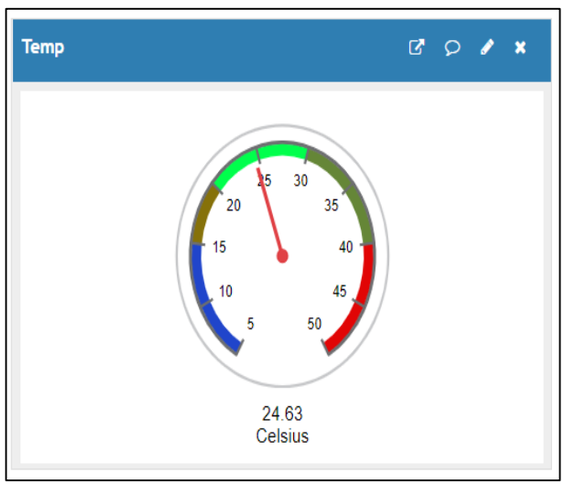












Conclusion:

The system is versatile and economical. The real time IoT based water quality monitoring system enables to monitor the parameters of water i.e. pH, TDS, turbidity and temperature in real automatically. This system reduces the cost and time, allow authorities to take decisions timely.

GitHub Link: https://github.com/Attiq821/Real-Time-Iot-Based-Water-Quality-Monitoring-System

Emails: mohammadfaizan.be17@iba-suk.edu.pk
atiq.be17@iba-suk.edu.pk