5.1 Work accomplished

According to the approved objectives, the following tasks has been accomplished

1. To integrate different sensors and Wi-Fi module with an IoT device and build a cost-effective hardware setup

Here, the basic concept of writing and reading data to a WiFi module and storing it onto our database has been achieved. This will help us further when we transition from a development prototype to finished product.

2. To develop an interactive web dashboard to tabulate live readings from the sensors for the user.

The major skeleton of the dashboard has been created, with only some pages remaining such as user settings etc. However, the template of these have been stored for reuse. The connection between the Firebase database and the website has also been achieved. With the use of Django framework, the website is running without any issue. Similarly, the use of Charts.js has proved integral for creating the graphs that are visualized in front of the user for further analysis.

3. To process data from different sensors like SAR sensor, pH sensor humidity sensor etc. calibrate the readings and send it to web portal using the IoT device.

And lastly, while the task below has not been accomplished with the sensors mentioned, the fundamental logic behind it has been understood and implemented, albeit with different sensors.

The only task remaining in the above objective is the calibration of the actual sensors for the finished product.

5.3 Benefits

Irrigation water quality is a critical aspect of crop production. There are many factors which determine water quality. Among the most important are alkalinity, pH and soluble salts. Poor quality of water is generally responsible for slow growth of the crop, poor aesthetic quality of the crop and, in some cases, can result in the gradual death of the plants. Poor water of quality leads to major losses for farmers and can also affect soil health. Our project aims to develop a monitoring system which aims to provide reliable sensors, an established IoT network to monitor water quality and a real time dashboard to analyse data and classify water as fit or unfit.

This will not only help us to provide a system that improves the overall yield of farmers, but also provides long term assistance in maintaining the quality of soil. This will, create a positive cycle as it will ensure that farmers don’t have to depend on artificial fertilisers and minerals, which will in turn improve the health of the soil even further.

Moreover, our system can also be used to see the long term effects of good quality irrigation water on a piece of land. Suitable water will not only ensure a good yield for the crops, but longer durability for farm machines such as tractors as well. These effects will compound and multiply and benefit the environment greatly, which is essential in this day and age of global warming.

Another benefit of using our product is the provision of constant, structured and secure data regarding the water that is used by the farmers. This data can be used further to implement better systems as technology improves, and it can also be used to analyse any long-term issues that may be costing farmers a fortune. For example, if the water begins to turn unsuitable for a few months, then it can be analysed using our system and dashboard.

Moreover, our system does not rely on constant assistance of the internet and will thus, save farmers from such overhead costs.