NORTH SOUTH UNIVERSITY
Center Of Excellence in Higher Education

Project Proposal
"Protisruti"
Junior Design (CSE299)

Section: 16

Group Members:

- Sirajus Salekin Nahin - 173 1210 042
- Samira Saif Joarder - 181 1482 042
- Ummay Ashim Laila – 181 2335 642
- Md. Asraful Islam Asif – 181 3425 642

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Protisruti

1.Abstract

Protisruti is an IOT based device that can be beneficial to farmers in the irrigation process. A software application will control this device and it is assured that anyone can understand this application without any difficulties. Even all the collected data from this device will be stored in a real-time database (Firebase). These data will be used further for our research purpose, and user can make their work easy by going over the data. This will help him to have an abstract overview of his lands and crops. Automation of water pump and light through the device will be a great help. The device is made using Raspberry pi. Here, the Microcontroller is Raspberry pi. Pi will work for reading data and sending data to the database. From data read to sending data to the database, python will be used using various library.

2.Introduction

The project is about IOT based farmer benefits. Our country's farmers are not blessed enough regarding facilities and knowledge, and there's nobody to help them regarding these. So, from that thought, we discovered the idea that we should make software and a device which will work completely for those helpless farmers. Our software's user interface (UI) will be entirely in Bengali language, and it will be elementary to use.

The device we are planning to make will help farmers to make their life easier. As an example, through our device, when the soil gets drier, the water pump will turn on and give the soil an efficient amount of water. Farmer can set a timer that how long the water pump will provide water. After that, the water pump will turn off automatically.

Mainly this project is for Farmers those who spent lots of money to the labor cost where this device will help farmers to make their life easier. Since farmers in our country are not that much educated so here, our first targeted customers will be those who are mostly educated and can learn quickly how to use this device.

3.Existing Solutions similar to your project

Some projects are pretty similar with the hardware part but not similar since those are not connected with the database system where we are trying to do so. Raspberry Pi Powered IOT

Garden by "Technovation" (technovation, n.d.) has a similar project. Their project has no software application to control it or any database system to store the data. But we are connecting the device to software and collect the data in a real-time database.

4.Description

4.1 Project Features:

Taking action by reading sensors is a focused feature of this device.

- Measure the soil moisture is another feature; it will turn off/on the water pump auto by reading the moisture sensor when there is a need for water.
- It will take the temperature and notify users through the software application.
- Initially, this device will measure methane natural gas if there is an excessive amount of methane gas; this device will send a notification.
- Measuring humidity can also be done.
- An automated lighting system is included.
- It will provide a weather update.
- All the data can be read for further use.

4.2 Technical Details

We are planning to make a device using *Raspberry Pi* and connect few sensors those will measure soil moisture using *YL-69 Soil Hygrometer*, measure methane natural gas by using *MQ-4 Methane Natural Gas Sensor*, detect smoke by using *MQ-5 Smoke Gas Detector Sensor*, measure humidity by using *DHT22 Digital Temperature Humidity Sensor Module*, Automation of water pump, automated lighting system using *light dependent resistor*. We will use firebase to collect a real-time database. So, we will send multiple sensor data to firebase from our device. We will use some Pythons libraries for storing data from Raspberry pi, but not decided yet what we are going to use.

4.3 Roles and Responsibilities

We are four members team. Two of us Sirajus Salekin Nahin and Ummay Ashim Laila will do the Hardware part. They will build the device to read the sensor data, and will send them to the firebase real-time database. Md. Ashraful Islam Asif and Samira Saif Joarder will make the Mobile Application that will show the sensor data, and User will be able to control the device through the application (e.g., water pump).

5.Project Breakdown with time efforts estimation

#	Task/Stages	Work hour (Tentative)
Stage 1	**Analysis and planning**	
1.1	Requirements analysis	12
1.2	Work plan creation	4
Stage 2	**Implementation**	
2.1	Equipment Collection	10
2.2	Setting the pi	12
2.3	Adding/Reading single sensor	8
2.4	Adding/Reading multiple sensors	30
2.5	Sending data to the firebase	45
2.6	IoT based work	48
2.7	Read data from firebase	45
2.8	Android (Mobile Application)	50
Stage 3	**Testing**	
3.1	Testing and Bug fixing	24
Stage 4	**Deliver**	
4.1	Present the final Project	1.5

6.Use Case Diagram:

7.GitHub Repository

https://github.com/samira9707/CSE299
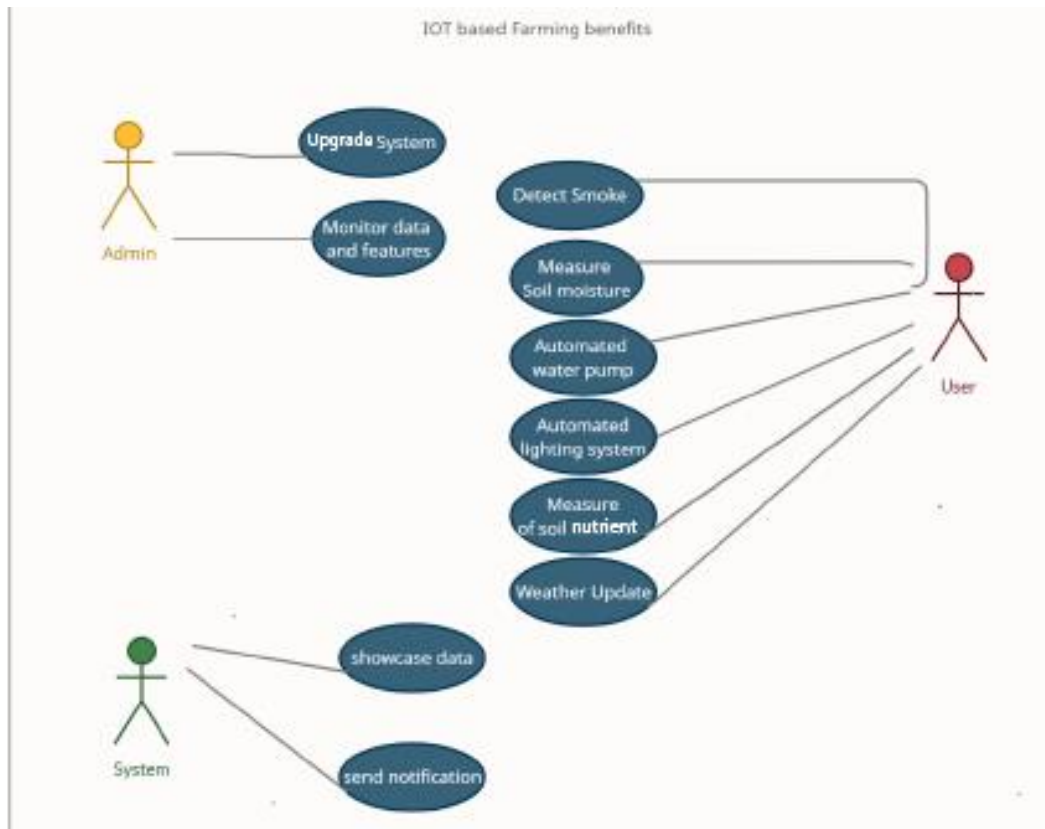
References

technovation. (n.d.). *instructables*. Retrieved from https://www.instructables.com/Raspberry-Pi-Powered-IOT-Garden/