

# Implementation of Smart Farming Monitoring and Controlled using IOT BLYNK App on ESP8266 Platform

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**Abstract**— This paper presents about the making farm smart and developed to help agriculture growth faster and safer. This paper express monitoring and controlling of parameters of the field area such as motor condition, humidity, moisture level, also wavering different crop within the farming area. Because they are cultivated in containers, pest and disease control is at an optimum. It contain controlling of 3-phase submersible motor using blynk app with indication using ESP-8266. The moisture sensors care strapped to the microcontroller. The arduino software is used for getting the output of the sensors. This criterions are sensed by way of IOT to Blynk app. This Blynk app is used for controlling and monitoring the parameters of farm with different crops.

**Keywords:** NODEMCU

## I. INTRODUCTION

Its era of technology world is becoming faster and easier due to this reason our farm also should become part of it. Setting in any part of world we can operate Observe and operate our farm just by our smart phone. Isn't it a great idea, yes with the help of node MCU and Blynk app it's possible. Here we use the concept called IOT. Using the concept of internet of things we design our project to make human life reliable. With the help of IOT things can be too easy. Main aim of this project is to atomize ruler homes in less cost.

Agriculture is the only food production source all over the world. Nowadays agriculture has diminished more in its form. This is mainly due to the complexities in the process of agriculture. Such complexities include checking the weather conditions on a daily basis, checking the moisture level of the soil, watering the crops according to the need and also detect the wavering of animals or birds or any other objects within the field. In today's world people are in urge to run out in hurry for their work and wages. No one cares for the source from which they get food. So agriculture is overtaken by artificial food production. Since the main reason behind this are those complexities in the agriculture, a good solution to this problem is to suggest an automatically controlled agriculture system.

The different communication technologies like GSM technology, cloud computing and the IOT technology are used for farm automation.

So in this campaign we use the recent IOT technology to send the values from the output to the Blynk app. All the parameters that we monitored can be seen through the Blynk app and our control actions that are carried out through the Blynk app. Even though it does not completely eliminate the complexities in agriculture, it can help agriculture to reduce the complexities to some extent. So people may feel easy to take care of their field and maintain their field. This will make people to participate actively in the

food production which can improve the economical and social status of the country.

## II. PROBLEM STATEMENT

The proposed paper aims for automation of water irrigation when farm is dry without human presence and avoiding water wastage in irrigation process. Various soil parameters like temperature, humidity and soil moisture level are measured. It will also be possible to control various operations of the field remotely from anywhere, anytime by mobile application as well as web application.

## III. OBJECTIVES

- Automation irrigation system
- Crop wise automatic Irrigation system
- Improve production of crop
- Single application to Remote control

## IV. COMPONENTS

### A. ESP8266

ESP8266 is a cost-effective WiFi module that supports both TCP/IP and microcontrollers. It runs at 3V with maximum voltage range around 3.6V. More often than not, it also comes under name ESP8266 Wireless Transceiver. This module stays ahead of its predecessor in terms of processing speed and storage capability. It can be interfaced with the sensors and other devices and requires very little modification and development to make it compatible with other devices. Components and GPIO pins interfaced on the little chip are very compact that makes it suitable for hard to reach places. It covers little space and everything is laid out on the PCB board quite precisely that no external circuitry is required to put this device in the running condition.

No external RF circuitry is required as this module comes with self-calibrated RF capability that makes it suitable to work under all operating conditions. It is a very useful device for wireless networking, however, there are some limitations i.e. external logic level converter is needed as it doesn't support 5-3V logic shifting.

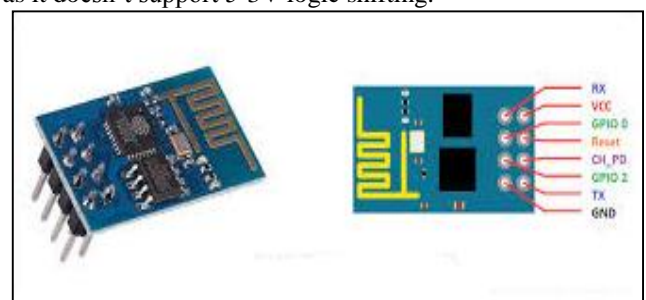


Fig. 1: ESP8266

## B. ATMEGA328

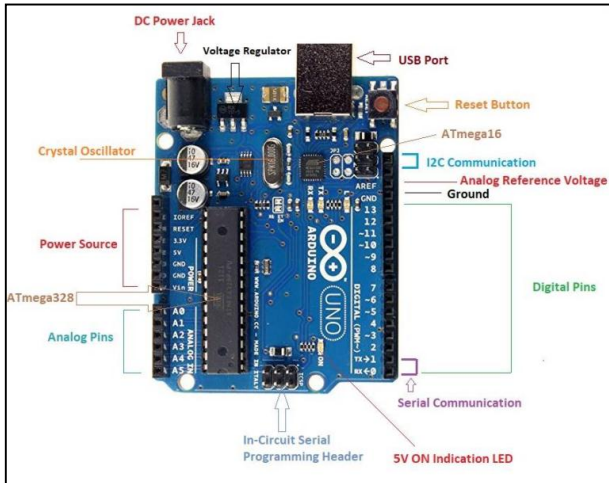


Fig. 2: Arduino ATMEGA328

Some of its features are high speed flash memory of 512KB, SRAM of 8 KB, 16 MHz clock. The microcontroller is responsible for counting the flow sensor pulses, and determines flow rate. When flow rate exceeds predefined limit, the solenoid valve for theft is turned off by the microcontroller. The microcontroller is also programmed to turn on/off supply water control solenoid valve according to the time of the day. At the end of fixed duration of time the microcontroller sends required data to central database via GSM. When theft is identified appropriate message is sent to particular responsible officer's mobile phone.

### 1) Features:

- Microcontroller Atmel Atmega168 or Atmega328
- Operating Voltage (logic level) 5 V
- Input Voltage (recommended) 7-12 V
- Input Voltage (limits) 6-20 V
- Digital I/O Pins 14 (of which 6 provide PWM output)
- Analog Input Pins 8
- DC Current per I/O Pin 40 Ma
- Flash Memory 16 KB (Atmega168) or 32 KB (Atmega328) of which 2 KB used by boot loader
- SRAM 1 KB (Atmega168) or 2 KB (Atmega328)
- EEPROM 512 bytes (Atmega168) or 1 KB (Atmega328)
- Clock Speed 16 MHz

## C. Relay

Relay is an electromagnetic device which is used to isolate two circuits electrically and connect them magnetically. They are very useful devices and allow one circuit to switch another one while they are completely separate.

They are often used to interface an electronic circuit (working at a low voltage) to an electrical circuit which works at very high voltage. For example, a relay can make a 5V DC battery circuit to switch a 230V AC mains circuit. Thus a small sensor circuit can drive, say, a fan or an electric bulb.

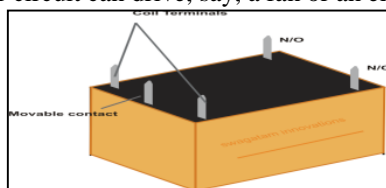


Fig. 3: Relay Pin Configuration

## D. Moisture Sensor

The dampness detector used is of repellent type that detects the dampness content present in all breed of soil and the stream for the crop will be given only based on this gauge of dampness assessment.

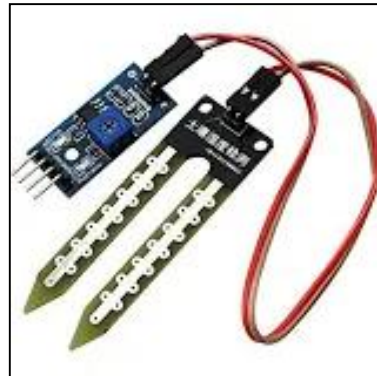


Fig. 4: Moisture Sensor

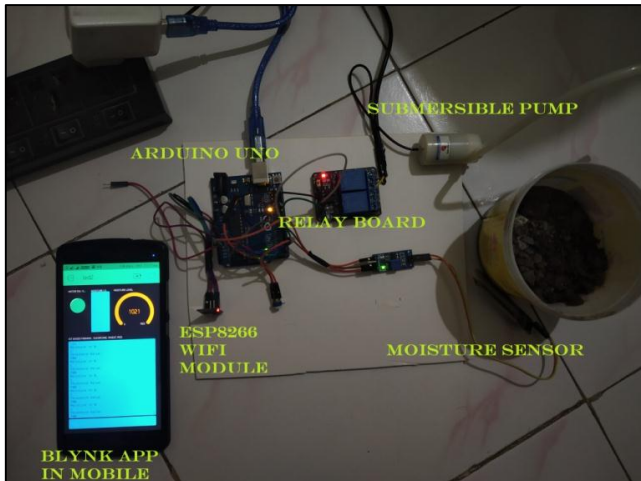
## V. SOFTWARE IMPLEMENTATION

Arduino software sketch 1.8.5 is used. It is an IDE (Integrated Development Environment) that takes codes to be written, compiled and upload. Embedded C language, which is used with commodious by any user is wont for the Arduino software. Even for a being new to embedded C, it is elementary to grasp the details, since it is facile to understand. Library files should be installed for sensor deeds and also integration with Blynk app can be made possible.

Blynk is a Platform with iOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It's a digital dashboard where you can build a graphic interface for your project by simply dragging and dropping widgets. It's really simple to set everything up and you'll start tinkering in less than 5 mints. Blynk is not tied to some specific board or shield. Instead, it's supporting hardware of your choice. Whether your Arduino or Raspberry Pi is linked to the Internet over Wi-Fi, Ethernet or this new ESP8266 chip, Blynk will get you online and ready for the Internet of Your Things



## VI. SCHEMATIC DIAGRAM OF THE SYSTEM



## VII. ADVANTAGES

- Easily modified crop wise moisture level.
- Automatically we can control and monitor 3 phases motor using BLYNK APP.
- We can easily store various monitor data.

## VIII. CONCLUSION

Using ATmega328 and ESP8266 Chip All the parameters that we monitored through the Blynk app and control actions that are carried out through the Blynk app are successfully done. Even though it does not completely eliminate the complexities in agriculture, it can help agriculture to reduce the complexities to some extent. Thus the system helps in maintaining the agriculture in a smart manner by performing more than three fourth of the work for regulated farming process in an automated way. We can easily set crop wise moisture level.

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