

AUTOMATIC FERTILIZER FEEDING IN FARM

¹ONKAR SANJAY THANGE, ²SACHIN RAJENDRA CHOPDE ,
³NEELAM ARVIND GANGURDE, ⁴KIRTI DILIP GOWARDHANE

B-Tech Electrical and Electronics (EEE)
Sandip University Nashik
INDIA

Abstract—IOT is the network of physical “things” or object that contain embedded technology to interface and sense to move with their internal states or the external setting. Automation is the most often spelled term within the field of electronics. The hunger for automation brought several revolutions within the existing technologies. Notice board could be a primary factor in any establishment or public places like bus stations, railway stations, colleges, malls etc. Sticking out numerous notices day to day could be a tough method. A separate person is needed to take care of this notice display. This project is regarding ad-vanced wireless notice board. In IOT based Web Controlled Notice Board, Internet is employed to wirelessly send the mes-sage from Browser to the display. A local web server is created, this could be a global server over net. At the PIC microcontrol-ler, LED matrix is used to display message and flask for receiv-ing the message over network. Whenever microcontroller re-ceives any wireless message from GSM module, it displays on the LED matrix. The Internet of Things (IOT) belief system can be looked as an exceptionally unique and radically distributed networked system composed of a very large number of identifi-able smart objects. These objects can convey and to interface among themselves, with end- users or different elements in the system. Entering the era of Internet of Things, the use of small, shoddy and flexible computer hardware that allow end-user programming become present. One of them, considered in this, is the PIC microcontroller, fully customizable and programma-ble small computer board. Relative investigation of its key com-ponents and exhibitions with some of current existing IOT pro-totype platforms have shown that despite few disadvantages, the PIC microcontroller remains an modest with its effectively utili-zation in diverse range of research applications in IOT vision

Keyword- LED Matrix; PIC Microcontroller; SPI; GSM Modem.



Published in IJIRMP (E-ISSN: 2349-7300), Volume 11, Issue 3, May-June 2023

License: [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)



INTRODUCTION:

The main purposes to design this electronic notice board sys-tem is to interface it with user’s mobile phones for displaying the latest information. In other words, the user can easily send the message or information for displaying from remote areas. In this system, the user sends the information or data from remote areas and this information or data is received by the sim loaded into GSM modem which is basically receiving end. This system is designed with PIC16F microcontroller, which is interfaced with GSM modem and level shifter through serial cable. LED Matrix is also used in this system for displaying the information or data. Max 232 is a 16-pin dip package, which consists of three major blocks and is powered by 5 volt’s supply. It is mostly used in embedded system for serial communication. The problem is occurred when we communicate between TTL logic and CMOS logic because, here in wireless electronic notice board we are communicating between GSM modem and microcontroller therefore the problem would be occurred. For solving this problem, the max 232 is used in this specific wireless electronic notice board. The GSM modem is a wireless modem, which can’t work without wireless network. This modem works like a dialup modem and sim is required for communication. In dialup mo-dem the data is send or received through the fix telephonic line but in GSM modem data is send or received though the radio waves



Fig. 1: SIM900A GSM Module [8]

Fig. 1

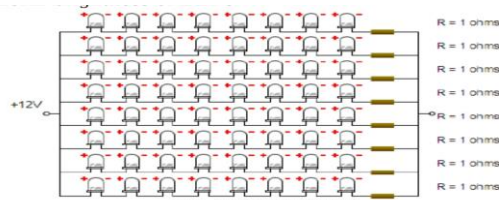


Fig. 2: 8x8 LED Matrix

II. METHODOLOGY

The main function of the proposed system is to develop a Digital notice board that display message sent from the user through mobile phone (SMS) and to design a simple, user friendly system, which can receive and display message/information in a particular manner with respect to date and time which will help the user to easily keep the track of notice board every day and each time he uses the system. System consist of two section called as sender and receiver. Sender is responsible for sending valuable information through the GSM protocol. In order to access Digital notice board the sender must enter into the corresponding mobile number [3]. When the user enter correct mobile number, the message can be typed and get space for the information transmission. To make the proposed system more user friendly we make an android application .By using this application sender can di-rectly enter the message. In receiver section, PIC microcontroller is connected on GSM module for accessing the sim card. It is a capable little device that enables people of all ages to explore radio waves transmission and reception. We use here embedded C language and GSM protocol as the basic working principle

III. SYSTEM REQUIREMENTS

A. Transformer:

In this wireless electronic notice board the transformer, which consists of two winding's primary and secondary is used for converting the 220V to 24V ac because this system is directly connected to the power supply.

B. Voltage Regulator:

The voltage regulator is used for providing the fix 12 volts, DC to the microcontroller and LCD display. In the absence of voltage regulator, the higher voltage may be damage the LED Matrix display or microcontroller and in this system these two components are too much important

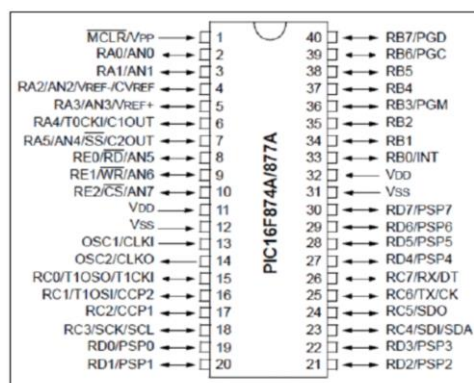


Fig. 3: PIC16F877A Microcontroller [7]

Fig. 3

C. MAX232:

The problem is occurred when we communicate between TTL logic and CMOS logic because, here in wireless electronic notice board we are communicating between GSM modem and microcontroller therefore the problem would be occurred. For solving this problem, the max 232 is used in this specific wireless electronic notice board.

D. GSM Modem:

GSM modem is a wireless modem as shown in Fig. 1. It works on wireless network. This modem works like a dialup modem and sim is required for communication. In dialup mo-dem the data is send or received through the fix telephonic line but in GSM modem data is send or received though the

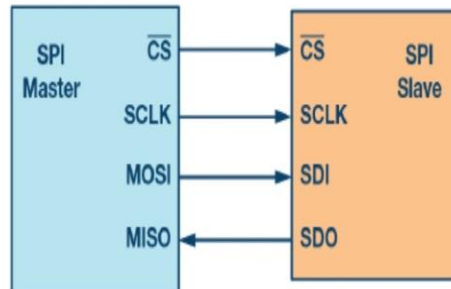


Fig. 4: SPI Protocol [7]

E. LED Matrix Display:

In this system we have used a led matrix of 8x8 resolution. 8x8 matrix consists of 64 dots or pixels. There is a LED for each pixel and these LEDs are connected to total of 16 pins. The whole LED matrix operates on 12 volt’s DC. Every LED is connected through a resistor to limit the current through LEDs, also a current driver circuit can be used to ensure a uniform brightness of LEDs

IV. MICROCONTROLLER

This system is based on PIC16F877A microcontroller developed by Microchip. It is 8-bit microcontroller which has self-programming, 256 bytes of EEPROM and 40 MHz of maximum speed. It also has 8 channel of analog to digital converter (A/D), two PWM functions and synchronous serial port for serial communication. The synchronous serial port can also be configured either for 3 wire serials peripheral inter-face (SPI) or 2 wire inter integrated circuit bus and address-able universal asynchronous transmitter receiver.

V. CONCLUSION

IN THIS STUDY, WE ESTABLISHED THE AUTOMATIC FERTILIZER METHOD US USEFULL FOR THE LONG DISTANCE THE PROFESSIONAL SOLUTION, ABILITY TO SAVE WATER, SAVE TIME PLANS AND TO EASE YOUR DAILY LIFE LET AUTOMATIC FERTILIZER FEEDING IN FARM TAKE CONTROL OF YOUR GARDEN/LAWN/NURSERY/PLANT'S DAILY WATERING NEEDS AND FERTILIZER CONSISTENTLY AT PRESET SCHEDULE. IT OFFERS WIDE RANGE OF SOLUTIONS TO WATER YOUR OUTDOOR FARMS AND TERRACE GARDENING BY WATERING THEM AUTOMATICALLY YOU HAVE SMART TIMER, WI-FI TIMER OR MOISTURE BASED SENSOR SOLUTIONS TO CHOOSE FROM AND THAT NOT IT, ALL THE CONTROL TECHNOLOGY ARE ALSO AVAILABLE IN SOLAR POWERED VARIANTS WHICH IS 100% CLOSE TO NATURE AND CAN BE VERY USEFUL FOR FARMING OR GARDENING.

A. *Discussion sectio* - The proposed system aims to estimate the nutrient content and recommend the suitable fertilizer to be used for higher productivity. Under application of fertilizer results in low & high due to insufficient nutrients chemical present in the soil for the crop. Over usage of fertilizer results in soil pollution. The food products from the polluted soil will be food vantage and health issues for the consumers. The system consists just work - simply efficient and designed with industrial grade components which offer long life. Using moisture sensor we obtain information and use that information to provide the necessary operation needed to control water sprinklers be designed.

B. Future work - As serious food insecurity persists in many parts of the world, improving quality in agriculture in a sustainable manner is today a real target. Farming plays an important role in food production and economic development in india and the world as a whole. farm produce depending on land quality, soil moisture and other climatic factors. This paper aims at developing an automatic fertilizeer feddding & controlling management system for the improvement of soil & farm yard fertilize by timely application of fertilizer and water level required for the crops growth and development.

REFERENCES:

1. www.ChambalFertilisersandChemicalsLimited.in
2. https://www.researchgate.net/publication/321185225_automatic_fertilized_irrigation_control_and_management_system
3. <https://www.ijraset.com/best-journal/automatic-fertigation-system>
4. <https://cordis.europa.eu/project/id/286772/reporting>