

Automatic Detection and Removal of Blockages in the pipes of Seeder machine

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Abstract -

This paper presents the idea of the automatic system which detects and removes the blockages in the pipes of seeder machine. This automatic system is very useful for farmers. As increase in the technology, all the sector needs automation in every system. In current generation most of countries do not have sufficient manpower specially in agriculture sector. So there is need to develop equipment which will reduce the efforts of farmers. This system introduces a control mechanism which aims to detect blockages in the pipes of seeder machine and automatic removal of it by developing an android application. Objective of this system is to develop a totally automated system for seed sowing process. Hence by replacing a manual system, develop a secure, reliable and efficient system.

Key Words: (seeder machine, arduino microcontroller, HC05 bluetooth module, blockage removal circuit)

1. INTRODUCTION:

In the current generation most of countries do not have sufficient skilled manpower specifically in agriculture sector and it affects the growth of developing countries. Our India is one of the developing country in world. Which is on the a way to become an advanced country. So development in all fields is needed. In India, near about 70% people are dependent on agriculture. Our whole economy is based on agriculture. Agriculture field involves the effective production of food/feed/fiber and other goods for human and animals. From ancient day human power is used for different work of farming. It depend on huge amount for man power for it as well as it is more time consuming because all the process or works of farming has to done by human on its own.

Traditional sowing methods having following limitations:

- In manual seeding, it is not possible to achieve uniformity in distribution of seeds.
- A farmer may sow at desired seed rate but inter-row and intra-row distribution of seeds is likely to be uneven resulting in bunching and gas in field.
- Poor control over depth of seed placement. Labour requirement is high because two persons are required for dropping seed and fertilizer.

But nowadays we are using many machines to do many works of farming. Like we are having seeder machine for sowing seeds. The present methods of seed sowing are problematic. The equipment used for seed sowing are very difficult and inconvenient to handle. So there is a need to develop equipment which will reduce the efforts of farmers. Now a day this seeder machine is used for the sowing purpose but there are some problems related to this machine like blockages. So we are going to overcome that problems.

This system introduces a control mechanism which aims to detect blockages in the pipes of seeder machine. And automatic removal of it by developing android application. The drawbacks of the existing seeder machine will be overcome.

1.2. PROPOSED WORK:

To overcome the disadvantage of present methods of seed sowing mechanism. We are going to develop equipment which will detect the blockages and automatic removal of blockages in the pipes of seeder machine.

For detection of blockages we are going to use the LDR (Light Dependent Resister) will placed inside a transparent tube through which seed flow occurs. We are developing an advanced sensor system for detection of blockages. When blockages are detected farmer get the message on mobile phone and clogs inside the pipe also removed by blowing the pressurized air inside the pipe.

2. SYSTEM DEVELOPMENT:

System development will consist of three parts:

1. Detection of blockages
2. Automatic removal of blockages
3. Fabrication of model

2.1. Detection circuit:

A light dependent resistor (LDR) is also called a photo resistor or a photoconductor. It is basically a photocell that works on the principle of photoconductivity. The passive component is basically a resistor whose resistance value decreases when the intensity of light decreases. This optoelectronics device is mostly used in light varying sensor circuit, and light and dark activated switching circuits.



Fig-1: LDR

In light resistance of LDR is low. So current is starts flowing through the circuit and it flows to the base of transistor. And transistor is turn on, LED start glowing. LED is remains on till there is current through the circuit. But in dark resistance of LDR is increases and the current is reduced. Then transistor gets turn off. And LED stops glowing.

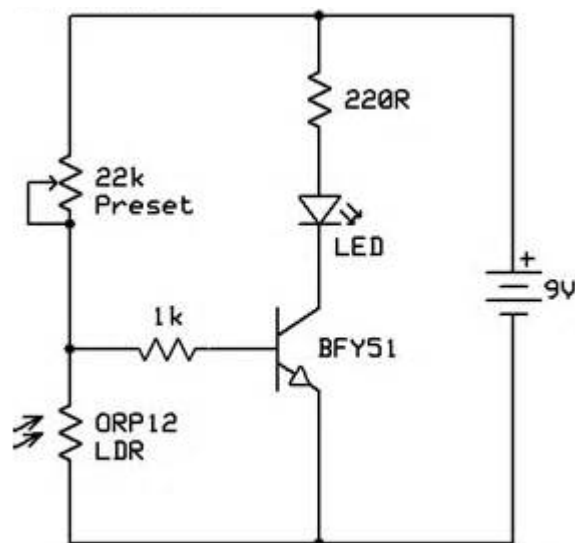


Fig-2: LDR detection circuit

2.2. Arduino Microcontroller:

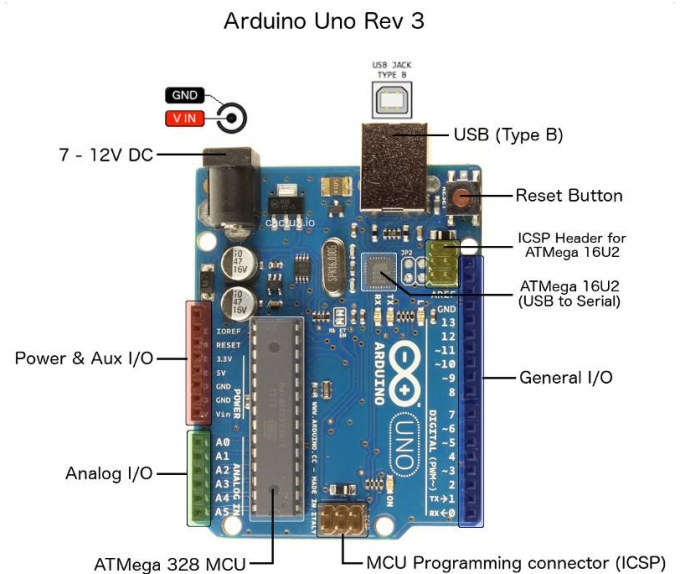


Fig-3: Arduino Microcontroller

1. Atmel Atmega 328P is the heart of UNO version Arduino.
2. This 28 pin microcontroller features 20 MIPS throughput capability at 20 MHz.
3. Input/Output:
 - Three Port: PORT B, PORT C, PORT D of total 23 I/o pins.
 - ADC pins: A0 to A5
 - USART: PD0(RXD) PDI(TXD)
 - PWM: OC0A, OC1A, OC1B, OC2A, OC2B
4. Chip operates in between 1.8V to 5.5V
5. Port features:
 - 6 channel 10 bit Analog to Digital
 - Master/slave SPI serial interface
 - Six PWM Channels
 - Byte-oriented 2 Wire serial interface
 - Programmable watchdog timer
 - Programmable serial USART/UART

2.3 Blockage removing technique:

A pin mechanism inside the pipe can be used to remove the clogs. Clogs inside the pipe also be removed by blowing pressurized air inside the pipe. Blockage removing circuit is connected with the arduino board. It consist dc motor used to blow pressurized air through pipe of seeder machine and then blockages will clear.

A DC motor that moves in discrete steps, have multiples coils that are organized in groups called phases by energizing each phase in sequence. The motor will rotate in one step at a time with a component controlled stepping. We can achieve very precise positioning and

speed control. A DC motor is a electromechanical device which converts electrical pulses into discrete mechanical movements. The motor position can then be commanded to move and hold at one of these steps without any feedback sensor as long as the motor is carefully sized to the application.

2.4 HC05 Bluetooth Module:

HC05 module is an easy to use Bluetooth SSP module, designed for transparent wireless serial connection setup. Here Bluetooth module is used to give message to user when blockage is occur. HC05 module is connected to arduino with tx pin of Bluetooth to module is connected to Rx pin of arduino and Rx pin of model is connected to Tx of arduino. Whenever low voltage is detected by the input pin of arduino, it send message to user with help of Bluetooth module.

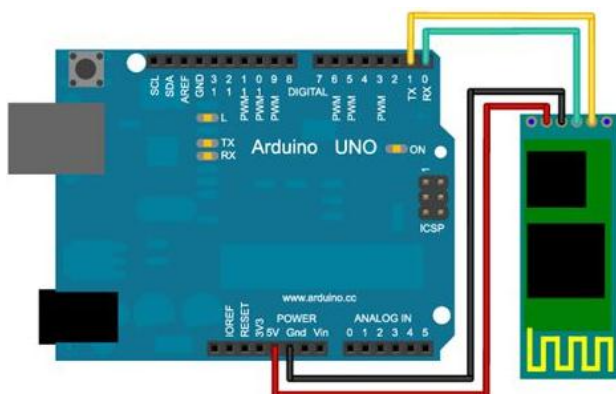


Fig-4: Arduino to HC05 bluetooth module connection diagram

3. SYSTEM BLOCK DIAGRAM:

When the blockages present in the pipes of seeder machine are detected by the detection circuit then the result of detection circuit is given to the arduino uno. Arduino uno transmits the signal to the Bluetooth model HC05 through transmitter. When the signal is received by the Bluetooth model HC05 then user will get the message on his android phone. After getting the message user will know about the blockages present in the pipes of seeder machine. To turn on the removal circuit he gives the message to the arduino controller via Bluetooth model. Then arduino controller will turn on the removal circuit and the blockages are removed.

Analog inputs A_1, A_2, A_3 are given to the arduino controller. Arduino mechanism is used to give indication to the user about the status of pipes of seeder machine and after that to turn on the removal circuit. So that the blockages are removed.

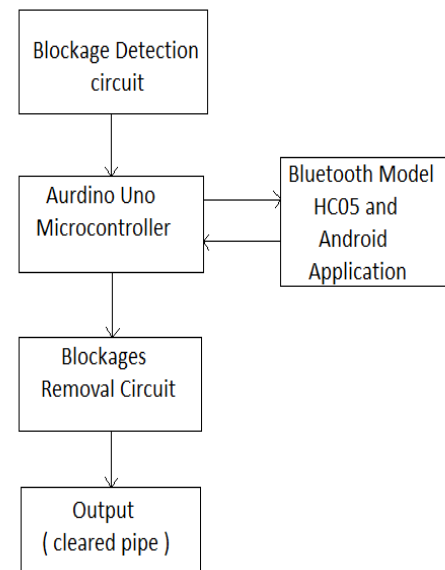


Fig -5: System block diagram

4. CONCLUSIONS:

By implementing this project we can able to find out the blockages in pipes during the process of seeding. This system can automatically removes the blockages in pipes and prevent uneven growth of crops due to blockages. And manual efforts are reduced by this system. This project is useful for farmer.

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