

Microcontroller Based on Agricultural Process in Groundnut Harvesting

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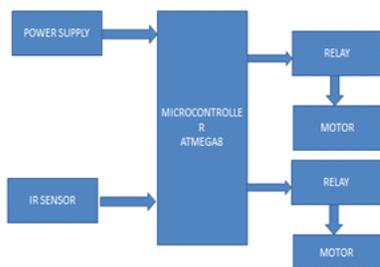
Abstract:

A groundnut harvesting machine was designed and fabricated. The optimum machine diggers were selected. Agricultural production must double by 2050 in order to meet the expected food demand due to population growth. Precision agriculture is the key to improve productivity and efficiency in the use of resources, thus helping to achieve this goal under the diverse challenges currently faced by agriculture mainly due to climate changes, land degradation, availability of farmable land, labor force shortage, and increasing costs. Here we have proposed a modern technology for groundnut harvesting.

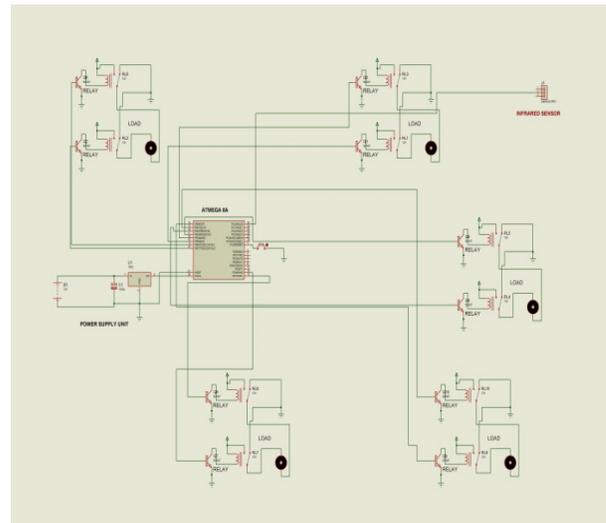
I.INTRODUCTION

The present system for groundnut harvesting involves only human labor. That is the main problem we are now facing, and it has been rectified in this project. It is the time consuming and tedious process. The harvested crop has to be manually cut down to separate the seeds. Here in this system, a robot is made that can harvest the groundnut plant. The whole system is controlled by the microcontroller Atmega8. The system operates independently. It automatically harvest the crop. We can adjust the height of the cutter.

II.BLOCK DIAGRAM



III.CIRCUIT DIAGRAM



A. Battery

An electrical battery is at least one electrochemical cells that change over put away substance vitality into electrical vitality.. The

whole framework is provided by a 12v battery. Here we have seriated two 6v batteries with the goal that we get a 12v .The connection between current, release time, and limit with regards to a lead corrosive battery is approximated (over a specific scope of current esteems) by Peukert's law:

$$t = \frac{Q_P}{I^k}$$

Where

Q_P is the capacity when discharged at a rate of 1 amp.

I is the current drawn from battery (A).

t is the amount of time (in hours) that a battery can sustain.

k is a constant around.

B. Microcontroller – ATMEGA 8

The microcontroller is the central unit that controls and coordinates al the components connected in the system. We have used the AVR microcontroller Atmega8. It has 28 pins in 3 ports B,C,D. in which we use any I/O pin to operate the relays. The relays are the interface between the microcontroller and the motors. The relays are supplied with 12v dc current. And this 12v is also fed to the motors. The microcontroller will be programmed according to which it will signal the relays, which intern will operate the motors. The entire system is supplied by a 12v battery. Here we have seriated two 6v batteries so that we get a 12v. The microcontroller will operate at 5v only hence we have used a regulator 7805 which regulates the 12v to 5v.

Features

1.High-performance, Low-power AVR®

- 8-bit Microcontroller

2.Advanced RISC Architecture

- 130 Powerful Instructions – Most Single-clock Cycle Execution
- 32 x 8 General Purpose Working Registers
- Fully Static Operation
- Up to 16 MIPS Throughput at 16 MHz
- On-chip 2-cycle Multiplier

3. High Endurance Non-volatile Memory segments

- 8K Bytes of In-System Self-programmable Flash program memory
- 512 Bytes EEPROM
- 1K Byte Internal SRAM.
- Write/Erase Cycles: 10,000 Flash/100,000 EEPROM
- Data retention: 20 years at 85°C/100 years at 25°C (1)
- Optional Boot Code Section with Independent Lock Bits

4. In-System Programming by On-chip Boot Program

- True Read-While-Write Operation
- Programming Lock for Software Security

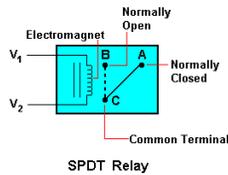
5. Peripheral Features

- Two 8-bit Timer/Counters with Separate Prescaler, one compare.

6. Six Channels 10-bit Accuracy

- Byte-oriented Two-wire Serial Interface
- Programmable Serial USART
- Master/Slave SPI Serial Interface
- Programmable Watchdog Timer with Separate On-chip

C. Relay



A relay is an electrically operated switch. Numerous transfers utilize an electromagnet to work an exchanging system mechanically, yet other working standards are likewise utilized. Transfers are utilized where it is important to control a circuit by a low-control motion (with finish electrical disengagement amongst control and controlled circuits), or where a few circuits must be controlled by one signal. The essential exchanges were used as a piece of long partition communicate circuits, repeating the banner coming in from one circuit and re-transmitting it to another. Here the hand-off is used as a trading device.

1.Special Microcontroller Feature

- Power-on Reset and Programmable Brown-out Detection
- Internal Calibrated RC Oscillator
- External and Internal Interrupt Sources
- Five Sleep Modes: Idle, ADC Noise Reduction, Power-save

2.I/O And Packages

- 23 Programmable I/O Lines
- 28-lead PDIP, 32-lead TQFP, and 32-pad QFN/MLF

3.Operating Voltages

- 2.7 - 5.5V (ATmega8L)
- 4.5 - 5.5V (ATmega8)

4.Power Consumption At 4 MHz, 3v, 25°C

- Active: 3.6 mA
- Idle Mode: 1.0 mA
- Power-down Mode: 0.5

D.DC Motor

A DC motor is any of a class of revolving electrical machines that believers coordinate current electrical power into mechanical power. The dc engine is work on 12v. There are four engines are utilized. The brushed DC electric engines are utilized. Favorable circumstances of a brushed DC engine incorporate low beginning cost, high unwavering quality, and basic control of engine speed

E.IR Sensor

IR sensors utilize infra red light to detect protests before them and measure their separation. The usually utilized Sharp IR sensors have two dark circles which utilized for this procedure, a producer and a locator beat of infra red light is discharged from the producer and spreads out in an expansive circular segment. On the off chance that no question is distinguished then the IR light proceeds perpetually and no perusing is recorded. Be that as it may, if a protest is close-by then the IR light will be reflected and some of it will hit the indicator.

- Voltage 5v
- Operating Sensitivity up to - 30cm-Adjustable
- Logic output -1/0 -5v
- Application - Industrial safety devices.

IV.CONCLUSION

Machine was designed, fabricated. The machine can be utilized to reap root trims other than groundnut. The drudgery of field work will be decreased and work deficiency issue in the State will be overwhelmed by the machine.

Anna university, Chennai at 2015 onwards. He is currently working as Assistant professor in the department of EEE at Excel College of Engineering and Technology, komarapalayam since June 2015. His teaching experience is more than 11 years and also published more than 03 reputed journals. He has life membership of ISTE. His research interest involves in Power Electronics, Renewable Energy.

V. REFERENCE

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R.GUNASEKARAN was completed his under graduation (B.E.,-EEE) in the year of 2003 at Kongu Engineering College, Perundurai and post graduated M.E (Power Electronics & Drives) at KSR College of Technology, Tiruchengode in the year of 2010. He is doing Ph.D.,(part-time) in