

WIRELESS PEAFAWL REPELLENT SYSTEM USING ATMEGA 328

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ABSTRACT

In this paper, a new concept discussed along with general lines. In present situation the natural resources are severely depleted, which makes animals to enter human living area and agricultural field, so it is necessary to monitor the agricultural field continuously in order to prevent the entry of animals. In our proposed paper, wireless peafowl repellent system using ATmega328 is used to prevent peafowl and other animals from destroying crops in agricultural field.

By using audio amplifier various kind of animals sound is produced due to this peafowl are driven back out of the field.

KEYWORDS: ATmega 328, Audio amplifier

I. INTRODUCTION

Deforestation, Lack of natural prey, and Habitat loss creates a conflict with an animal and forced them to live closely with human settlement prey on domestic livestock. Especially peafowl birds do not affect the human being but they affected the crops in the yields.

Losing the minimal resources that are necessary and dryness makes them completely wild and pretend to attack crops, cattle, and agricultural lands. To overcome this problem an intelligent repellent system is required to monitor automatically this product is designed with Arduino AT-mega 328 with WAN control is used to repel the peafowl.

II. LITERATURE SURVEY

Peacock Monitoring and Repellent system for Agriculture

Cutting down of trees and environmental changes creates a clash between human and animals. In present situation the natural resources are severely reduced. It makes animals to invade human living area and agricultural field. This quarrel between human and animals set human life in risk. So, it is essential to observe the agricultural field continuously in-order to prevent the entry of animals. In this project, motion of an animal is identified by using PIR sensors and drone attached with camera is stimulated to take an image of the trespasser. This image is used to analyze the type of trespasser by image processing. The type of danger trespassed is sent as an message to the land owner and also to the forest officers as an alert message using GSM technology. If the invader is peacock, repellent techniques such as annoying noise and turning on the vivid light are used to repel. The image of animal is dissimilar, alert message and repel techniques are not performed.

IOT based Animal Intrusion Detection system

PIR (Passive infrared sensor) detects the movement and stimulate the camera to take the animal image, once the animal is found by the sensor the signal is transmitted to the camera via a microcontroller Arduino Uno. The photo is differentiated with the sample image which is stored already. When the wild animal is identified as elephant the bright light is turned on and if leopard is identified then a loud noise is used to distract it. Consequently, alert message is sent to the forest officers and the land owners using GSM module.

Intrusion recognition in farmland through a wireless sensor network (WSN) technology

The motion sensor is kept at various areas to detect the movement and communicate to the organizer via Radio frequency transceiver. The detection raise then the organizer sends a call to the owners mobile to alert through the Global System for Mobile (GSM) module. An Arduino board is fixed near the sensor and the GSM module will be interconnected with buzzers and RFID transmitter. To differentiate permitted and prohibited entries in farmland Radio-frequency identification (RFID) tags are used.

Animal Intrusion Detection using Wireless Sensor Network (WSN)

The animal intrusion detection system is essential in various fields like villages near to forests, roads across forests and agricultural fields.

A system is created to victimize by sensors to notice the trespassing of those animals. The system for birds is that the ultrasonic sounds area made within the surrounding area factor of the farmlands wherever the arrival of birds detected. Once the animals arrive or trespasses, an alert message is provided to the land owners. The aim of this project is to notice the animals who trespasses and offers the alert to the system to require sure action.

III. EVALUATING TECHNIQUES

In our proposed paper, peafowl is driven back by producing several animal sounds by using Audio Amplifier. The peafowl repellent system is designed by using Arduino AT mega 328 with WAN Control used to repel peafowl. In this project, there is a transmitter block and a receiver block. The transmitter block contains a wireless transceiver, switches, Arduino Nano, OLED, and Power Supply Unit. The receiver block contains a wireless receiver, Arduino Nano, mp3 player, audio amplifier, speaker, and Power Supply Unit.

Block Diagram

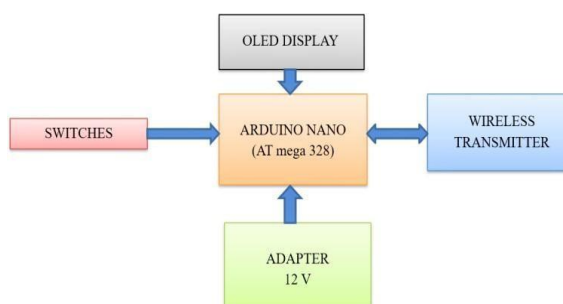


Fig 1: (a) Transmitter

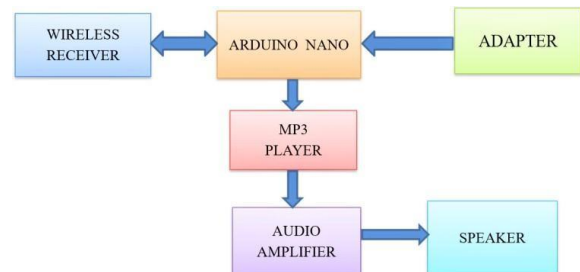
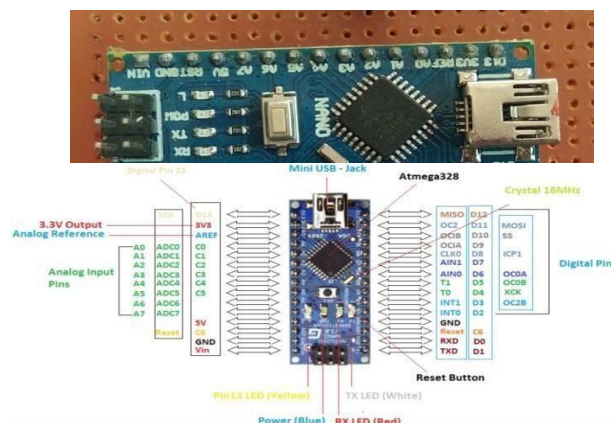


Fig 1: (b) Receiver Components Description

Arduino Nano:

The Arduino Nano is a type of microcontroller board that is a small, complete, and breadboard-friendly board that can be built with a microcontroller like ATmega328. It lacks only a DC power jack so that power supply is given using a small USB port or by connecting straightly to the pins like Vcc & GND.



PWM: 3, 5, 6, 9, 10, and 11. Provide output with the analog Write() function.

SPI: 11 (MOSI), 10 (SS), 12 (MISO), 13 (SCK). These pins support, which, is not currently included in the Arduino language that is SPI communication.

LED: 13. There is a built-in LED connected to digital pin 13. When the pin value is high, the LED is on, when the pin value is low, it's

data transmission. 250kbps, 1Mbps, and 2Mbps can be the data rate.

POWER CONSUMPTION - 1.9 to 3.6V is the operating voltage of the module, so we can easily connect without using any logic level converter, we can connect it to an Arduino or any microcontroller.

SPI INTERFACE - Then RF24L01+transceiver module communicates with a maximum data rate of 10Mbps over a 4-pin Serial Peripheral Interface (SPI).

Table 1: Pin Description

Description	Specification
Microcontroller	ATmega 328
Architecture	AVR
Operating Voltage	5 V
Flash Memory	32KB
SRAM	2KB
Clock Speed	16MHz
EEPROM	1KB
DC current	40Ma
Input Voltage	7 -12 V
Digital I/O Pins	22

RADIO FREQUENCY - The nRF24L01+ transceiver module is operated in a 2.4 GHz worldwide. It is designed to work in ISM frequency band. It uses GFSK modulation for

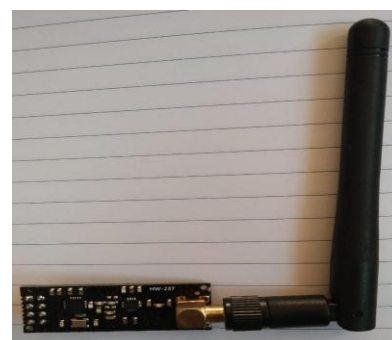


Fig 3: (a)Wireless Transceiver

Table 2: Pin Description of Wireless Transceiver

Ground (GND)	Connected to Ground
Power (Vcc)	Powers the module 3.3V
Chip enable (CE)	Enable SPI Communication

Chip Select Not (CSN)	Has to be kept high always. Else, it will disable SPI
Serial Clock (SCK)	Provides the clock pulse using which the SPI Communication.
Master Out Slave In (MOSI)	Connected to MOSI pin of MCU, for the module receive the data from the MCU.
Master In Slave Out (MISO)	Connected to MISO pin of MCU, for the module to send data.
Interrupt (IRQ)	It is an active low pin is used only if interrupt is required.

Arduino	51	50	52
	MO	MIS	SCK
Arduino	11	12	13
Arduino	11	12	13
Arduino	51	50	52

OLED Display:

OLED Displays are the most advanced and the coolest modules which are used in this project to display the status of the transmitting part. They come in small factor and consumes very low power while presenting bright attractive colors. It is flexible, transparent, thin-film packaging, high-efficiency materials, white lighting, and phosphorescent. These features help us to know about the receiving part condition very clearly.

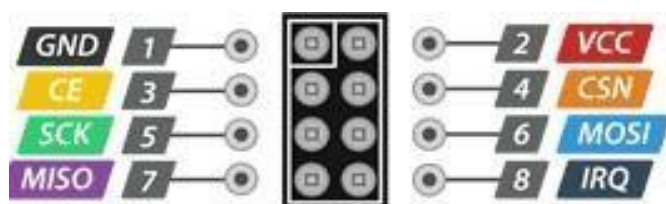
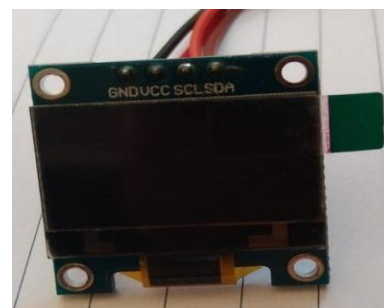


Fig 3: (b) Pinout diagram of Wireless Transceiver

Table 4: Pin Configuration of Wireless Transceiver to Arduino

	MO	MIS	SCK
Arduino	11	12	13
Arduino	11	12	13

Switches:

A switch is a circuit breaker that may on or off the module in an electrical circuit, break the electric current or redirecting it from one conductor to another. In our paper, we are using the switch conditions to control one or more receivers manually at the same time.

MP3 Player:

The DF player mini is a compact sized, inexpensive mp3 module with a simple audio output that can be connected to a speaker. MP3 Player is used to storing various Audio amplifiers to boost up the achieve the required voltage and power.

We use a 12V, 1A adapter for power supply which is used to convert 230Volt, 50Hz to the required 12V dc voltage.

Table 5: DF player Specification

Rx	D11
Tx	D10
Vcc	5v
Gnd	Gnd



Fig 5: MP3 Player

Audio Amplifier:

An audio amplifier is an electronic amplifier that amplifies low-power electronic

audio signals. An Audio Amplifier is used to boost up the low power signals which transmit the boosted signal to the speaker.

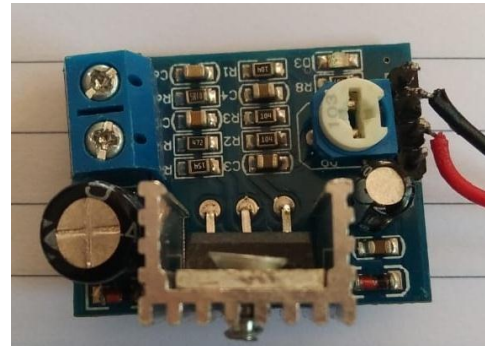


Fig 6. Audio Amplifier

IV. RESULT AND DESCRIPTION

We took the prototype and placed the transmitter part in the motor room and the receiver part in the field. When we switch on the module the power supply passes from the adapter to Arduino nano, then the signal passes from the Arduino nano to the wireless transmitter which is interrupted. The signal transmits from the wireless transmitter to the wireless receiver.

The signal will be transmitted to the Arduino nano, and the Arduino nano is used to send the recorded animal's sounds which are stored in the mp3 player to the audio amplifier which the audio amplifier is used to convert the various animals sounds to the speaker, finally, the sounds will be produced in the speaker. when the peafowl hears the sounds it will run away from the farmland.



Fig 7. Prototype Model

V. CONCLUSION

The proposed project peafowl repellent system was designed and implemented as Wireless using AT mega 328. Through the proposed system surveying land area can be increased and effective surveillance is achieved. Surveying time can be increased by increasing the battery backup. This method does not affect the environment and bird's life. Thus, increases crop productivity. By using the methodology which is discussed in this paper, it can be used up to 1 km on agricultural land. In the future, we can implement this idea in home, office, animal nomadic area, and also in other places.

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