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Bird Feeder and Poultry Conditioning and Monitoring Using Embedded system

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***Abstract*—The Chicken poultry industry is animportant industry for sustainable food supply in our country. The development of an automatic chicken feeding machine can be very useful to the growth of the poultry industry. In existing system contains temperature and humidity detection and the chickens need a presence of manpower to manually give the food to the chickens. The use of proposed system can replace the worker for feedingthe chicken thus overcome the labor problems in the industry and introduce a semi-automatic process inthe poultry industry. The Proposed system can be applicable in Poultry Farm, in addition prevention against theft of chickens is equally important as it safeguards revenue losses. Considering the health ofchicken's gas sensor is placed to indicate the presence of harmful gasses like Ammonium. Fire accidents can be prevented with the help of fire sensor and alerts the user. temperature and humidity is monitored and maintained in the poultryfarm with the help of temperature sensor. The dataobtained from sensor are updated in GSM cloud.**

I. INTRODUCTION:

Poultry farming is the form of animal husbandry which raises domesticated birds such as chickens, ducks, turkeys and geese to produce meat or eggs for food. Poultry production is a very important source of livelihoods for most rural communities. Because it has good quality of protein and it increases profitability. In Poultry, there are three types of breeds. They are, fertilized eggs.

Our project is based on poultry chickens. Smart poultry farm has a great impact on increasing growth of chicken in order to provide better quality food. In contemporary world automation plays a vital role. Automation of poultry farm by using Internet of Things and Global System for Mobile Communication.

Chicken is the most favourite produce in today's world because it is a nutrient rich food with high protein, low fat and low cholesterol than other poultries. Environmental parameters of a poultry farm such as temperature, humidity, ammonia gas and intensity of light are monitored and controlled automatically to increase the productivity of chicken. Food valve also controlled and monitored with the help of servo motor without human interference.By connecting all the sensor modules to the Arduino all sensor values are acquired then using module it will be uploaded to the web page. The person in-charge of the poultry

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farm can get the internal environmental situation of poultry farm through PC or mobile phone using internet. This system will control temperature, humidity, ammonia gas and intensity of light with the help of respectively cooling fan and light ON/OFF without human interference.Based on the threshold values it will switch ON/OFF the devices. System design provides automated poultry, reduces man power and increases production of healthy chicken.

From the last few decades, around the globe, there has been an increased level of awareness regarding the food safety and there has been a high demand for better quality food. This has forced many countries to adopt new protocols to change all manual farms into automated farm. In this way, smart poultry farm has a great impact on increasing productivity of chicken. This paper focused on modern technologies for a poultry farming to control all environmentalparameters which effects on the growth of the chickens. If environmental condition is not up to the mark, then there may be harmful for digestive, respiratory and behavioural change in the chickens. If chickens may get suitable atmosphere and proper water then it may grow rapidly and health of chickens will be good so the weight of the chickens will be increases. In the growth of the chicken climate plays a vital role. Smart poultry farm is designed in such a way that the climate can be changed by cooling fan and bulb. Environmental parameters are monitored and controlled with the help of Arduino. Monitored sensor values can know the internal environment of poultry farm are stored in the cloud and the operation is either control or monitor by GSM.

II. SYSTEM CONFIGURATION:

The Arduino Nano is a small, complete, and breadboard-friendly board based on the ATmega328P (Arduino Nano 3.x). It has more or less the same functionality of the Arduino Duemilanove, but in a different package. It lacks only a DC power jack, and works with a Mini-B USB cable instead of a standard one. The Nano board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards. The Arduino Nano can be powered via the Mini-B USB connection, 620V unregulated external power supply (pin 30), or 5V regulated external power

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supply (pin 27). The power source is automatically selected to the highest voltage source.

III. DESIGN OF THE PROPOSEDSYSTEM:

In this proposed system we are monitoring temperature, humidity and harmful gas like Ammonia. If the temperature goes below the threshold value, then bulb will turn ON. If temperature exceeds the threshold value, then DC Fan will turn ON. If harmful gas is detected then cooling fan will turn ON. Also, the security measures like fire detection and theft are detected and the alert message is sent to the user via mobile phones using GSM Module. In addition to that automatic food feed and water feed is done with the help of servomotor and dc pump motor using all the data fetched from the sensor are updated to cloud therefore the operation are either control or monitor by GSM.

Fig.1 Block diagram of the Proposed System

A. Selection of the DHT11 SENSOR

The DHT11 is a basic, ultra-low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed). It's fairly simple to use, but requires careful timing to grab data. The only real downside of this sensor is you can only get new data from it once every 2 seconds

B. GSM

The words, "Mobile Station" (MS) or "Mobile Equipment" (ME) are used for mobile terminalsSupporting GSM services.
A call from a GSM mobile station to the PSTN iscalled a "mobile originated call" (MOC) or

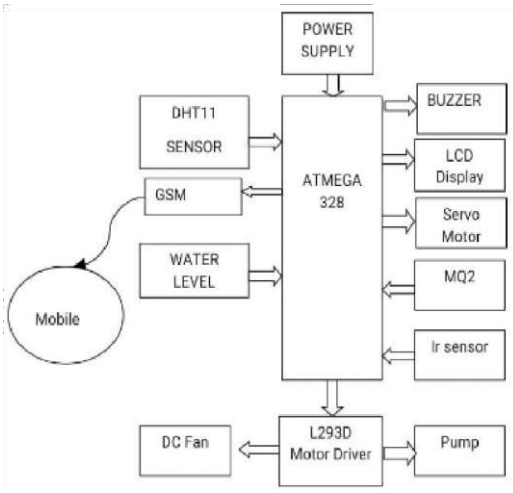
"Outgoing call", and a call from a fixed network to a GSM mobile station is called a "mobile Terminated call" (MTC) or "incoming call".

C. Water Level Sensor

Level sensors are used to monitor and regulate levels of a particular free-flowing substance within a contained space. These substances are usually liquid; however, level sensors can also be used to monitor some solids such as powdered substances. Level sensors are widely used industrially. Cars use liquid level sensors to monitor a variety of liquids, including fuel, oil and occasionally also specialist fluids such as power steering fluid. They can also be found in industrial storage tanks, for slurries, and in household appliances such as coffee machines. Basic level sensors can be used to identify the point at which a liquid fall below a minimum or rises above a maximum level. Many sensors candetail the specific amount of liquid in a container relative to the minimum/maximum levels, to provide a continuous measurement of volume.

D. DC Fan

A mechanical fan is a powered machine used to create flow within a fluid, typically a gas such as air. A fan consists of a rotating arrangement of vanes or blades which act on the air. The rotating assembly of blades and hub is known asan impeller, a rotor, or a runner. Usually, it is contained within some form of housing or case.This may direct the airflow or increase safety bypreventing objects from contacting the fan blades. Most fans are powered by electric motors, but other sources of power may be used, including hydraulic motors, hand cranks, internal combustion engines, and solar power. Mechanically, a fan can be any revolving vane or vanes used for producing currents of air.



E. Buzzer

Basically, the sound source of a piezoelectric sound component is a piezoelectric diaphragm. A piezoelectric diaphragm consists of a piezoelectric ceramic plate which has electrodes on both sides and a metal plate (brass or stainless steel, etc.). A

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piezoelectric ceramic plate is attached to a metal plate with adhesives. Applying D.C. voltage between electrodes of a piezoelectric diaphragm causes mechanical distortion due to the piezoelectric effect. For a misshaped piezoelectric element, the distortion of the piezoelectric element expands in a radial.

E. LCD

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi segment LEDs. The reasons being: LCDs are economical; easily programmable; have no limitation of displaying special & even custom characters (unlike in seven segments), animations and so on. A **16x2 LCD** means it can display 16 characters per line and there are 2 such lines. In this LCD

each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

F. L293D Motor Driver

The L293D devices are quadruple high-current half-H drivers. The L293 is designed to provide bidirectional drive currents of up to 1 A at voltages from 4.5 V to 36 V. The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V.

G. Servomotor

A **servomotor** (or **servo motor**) is a rotary actuator or linear actuator that allows for precise control of angular or linear position, velocity, and acceleration. It consists of a suitable motor coupled to a sensor for position feedback. It also requires a relatively sophisticated controller, often a dedicated module designed specifically for use with servomotors.

Servomotors are not a specific class of motor, although the term *servomotor* is often used to refer to a motor suitable for use in a closed-loop control system. Servomotors are used in applications such as robotics, CNC machinery, and automated manufacturing.

IV. WORKING METHOD:

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In this system, we use ARDUINO UNO (ATmega328P) microcontroller which acts as brainof the system, because the entire system program

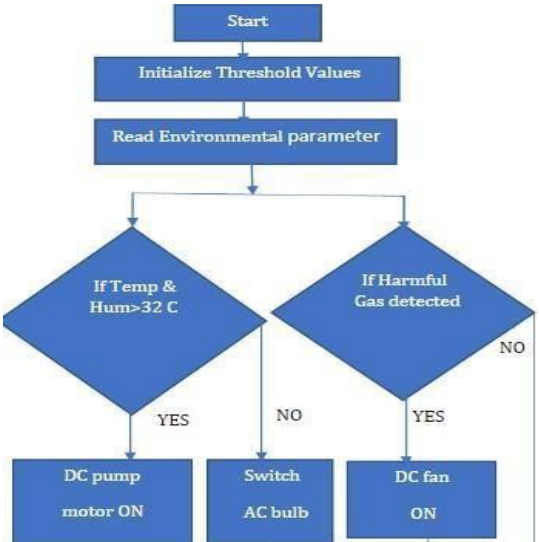
instruction stored in it. Here we have temperature sensor (DTH11) which whenever there is a high temperature and immediately start water sprinkling using DC pump motor as well with detection of low temperature on the 230volt bulb to maintain the temperature. We know that humidity is depend on the temperature. When the temperature is high, humidity is low and vice versa. As it is a farm, the chance of formation different types of gas from manure of chicken is comparatively more. So that gas sensor (MQ2) sense the presence of gas and immediate evacuation to be done using dc fan and we have automatic food feeder which feed food according to time with the help of servomotor and feed the water with pump motor by use of. IR Sensor will detect the theft person and Fire sensor detects the flame which intimate to user by using GSM Module. All the data fetched from the sensor are updated to cloud therefore the operation are either control or monitor by GSM.

V. APPLICATION:

Arduino nano is a very useful devices that comes with a wide range of application and covers less space as compared to other Arduino board;

- Arduino Metal detector
- medical instruments
- Industrial automation
- Android Application
- GSM Based projects.

VI. FLOWCHART:



VII. HISTORY:

In 1980's the analog cellular telephone systems were growing rapidly all throughout Europe, France and Germany. Each country defined its own protocols and frequencies to work on. For example, UK used the Total Access Communication System (TACS), USA used the AMPS technology and Germany used the C-netz technology. None of these systems were interoperable and also, they were analog in nature. In 1982 the Conference of European Posts and Telegraphs (CEPT) formed a study group called the GROUPE SPECIAL MOBILE (GSM) The main area this focused on was to get the cellular system working throughout the world, and ISDN compatibility with the ability to incorporate any future enhancements. In 1989 the GSM transferred the work to the European Telecommunications Standards Institute (ETSI.) the ETS defined all the standards used in GSM.

VIII. CONCLUSION:

Iot is an innovative for condition management especially poultry farming which may be changed from the Routine Traditional farm into smart auto mated poultry farm. Various parameters like movement and weight of chickens and disposal of wasted Have been continuously monitored to improve health and growth of chicks and chicken.

IX. FUTURE ENHANCEMENT:

The system is fully an automatic system to monitor movement and Weight of chickens and controls disposal of waste continuously. This Paper can be extended by automatically detecting the Diseases.

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