

IoT Swatch Kisan Protecting Agriculture from Wild Animals

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Abstract: *The main aim of this project is to protect the crops from wild animal attacks. The most essential need for all living things is food. Agriculture is the primary source of our food, either directly or indirectly. The security of the agricultural land is crucial today. Animals are frequently destroy crops on farms, resulting in significant losses for farmers. Farmers deal with a new kind of issue every day. An animal detection system has been created to identify the presence of animals in order to address this issue. without injury, issues a warning and directs the animal. The device is set up to scan the entire area continually for any animals. Animals can hear at particular frequencies.*

A motion detector, an electrical device that uses a sensor to detect nearby motion, is used in this circuit. A system that automates a process or alerts a user to motion in a space frequently includes such a gadget as a part. PIR sensor, power supply, buzzer, resistor, and transistor are the circuit's primary components.

Keywords: agricultural

I. INTRODUCTION

"IoT Swatch Kisan" represents a revolutionary approach to safeguarding agriculture from the threat of wildlife intrusions. By integrating a sophisticated array of sensors such as soil, fire, and PIR, along with cutting-edge components like NodeMCU, Arduino Uno, LCD, and buzzer, this system provides comprehensive field monitoring capabilities. When triggered by the presence of animals, the sensors immediately activate the buzzer, alerting farmers to potential threats in real-time. This prompt notification system empowers farmers to take swift action, effectively deterring wildlife and protecting their crops from damage.

With its user-friendly interface and straightforward installation process, IoT Swatch Kisan offers a practical and accessible solution for farmers of all backgrounds. The integrated LCD display provides clear and concise notifications, ensuring that farmers can respond promptly to wildlife intrusions. Moreover, by minimizing crop damage caused by wildlife, this system promotes sustainable farming practices and reduces the need for harmful deterrents or pesticides. Overall, IoT Swatch Kisan represents a significant advancement in agricultural technology, providing farmers with the tools they need to protect their livelihoods and ensure a bountiful harvest.

II. LITERATURE SURVEY

The literature on IoT-based plant protection systems against bird and wildlife attacks is relatively new and there is little research in this area. However, a number of studies have been conducted and the following literature review summarizes some of the most important findings. A study published in the Journal of Applied Remote Sensing evaluated the effectiveness of an IoT-based bird detection system for crop protection. The study found that the system was effective in detecting and deterring birds, resulting in reduced crop damage. Another study, published in the International Journal of Advanced Research in Computer Science and Software Engineering, proposed an IoT-based system to protect crops from wild animals. The proposed system used infrared sensors, cameras and deterrents to detect and prevent animal attacks. The study concluded that the system was effective in reducing crop damage. A review article published in the Journal of Agriculture and Environmental Sciences discussed various technologies and approaches that can be used in plant protection, including IoT-based systems.

The article highlighted the advantages of IoT-based plant protection systems, such as cost-effectiveness, efficiency and ease of use. The study concluded that the system was effective in protecting crops and reducing losses. literature suggests that an IoT-based plant protection system against bird and wildlife attacks is a promising technology to help farmers protect their crops effectively and efficiently. The system has shown positive results in reducing crop damage and increasing yields. However, further research is needed to assess the long-term effectiveness of the system and identify potential limitation.

Internet of Things (IoT)

IoT stands for Internet of Things. It refers to the interconnectedness of physical devices, such as appliances and vehicles, that are embedded with software, sensors, and connectivity which enables these objects to connect and exchange data. This technology allows for the collection and sharing of data from a vast network of devices, creating opportunities for more efficient and automated systems.

Internet of Things(IoT) is the networking of physical objects that contain electronics embedded within their architecture in order to communicate and sense interactions amongst each other or with respect to the external environment. In the upcoming years, IoT-based technology will offer advanced levels of services and practically change the way people lead their daily lives. Advancements in medicine, power, gene therapies, agriculture, smart cities, and smart homes are just a few of the categorical examples where IoT is strongly established. IOT is a system of interrelated things, computing devices, mechanical and digital machines, objects, animals, or people that are provided with unique identifiers. And the ability to transfer the data over a network requiring human-to-human or human-to-computer interaction.

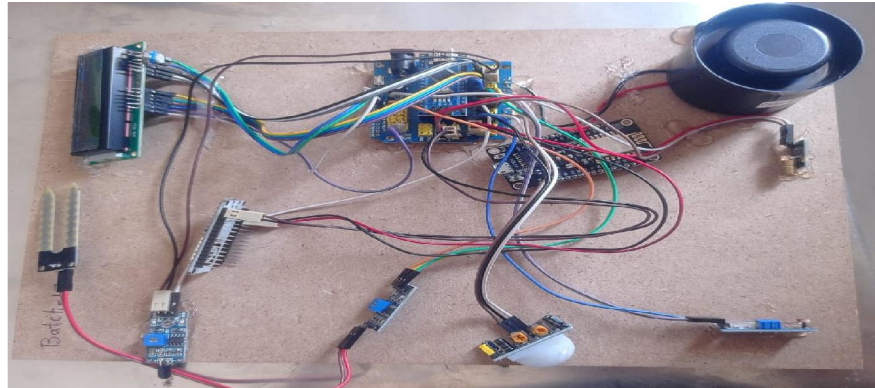
Existing System

To stop assaults from wild animals, boundary walls and solar fences are constructed around the vulnerable locations. However, this arrangement prevents the animals from being independent or having a wide range of mobility. In order to redirect wild animals onto an alternative path without obstructing car traffic, overhead or subsurface structures are erected. However, this approach is more labor-intensive, takes longer to complete, and is neither efficient nor acceptable. To better understand the movements and habitat use patterns of lions, tigers, elephants, olive riley turtles, and other wild animals, research institutions are using a variety of information technology tools, such as radio collars with extremely high frequencies, the global positioning system, and satellite uplink facilities.[8]

III. PROPOSED SYSTEM

A proposed IoT-based crop protection system against wildlife attacks would use sensors and prevent animals from entering a crop field. The system is designed to operate independently without human intervention The proposed system would consist of the following parts: Sensors: The system would use a combination of infrared and motion sensors to detect wildlife in the crop area. Internet of Things (IoT) Platform: The system would be connected to an Internet of Things platform that would allow farmers to control the system remotely The platform would also provide real-time alerts and notifications when an intrusion is detected. When the sensors detect an intruder. The IoT platform would analyze data from sensors. Appropriate deterrence is activated based on the type of intruder detected.. The farmer would be notified of the intrusion through the IoT platform and could monitor the system remotely so that preventive measures are effective. Overall, the proposed IoT-based plant protection system against wild animals would provide farmers with a cost-effective and efficient solution to protect their crops. The system would help reduce crop losses due to animal incursions and improve yields.

IV. RESULTS



Power Supply Activation:

When the power supply is in ON condition it display as

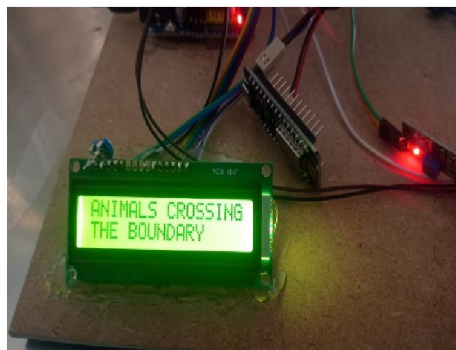
LCD Display: "KISAN PROT AGRICULTURE FROM WILD ANIMALS."



Animal Detection:

If animals are detected:

LCD Display: " ANIMALS CROSSING THE BOUNDARY."



If No animals detected :LCD Display: " NO ANIMALS DETECT .

Soil Moisture Status:

If soil is wet:

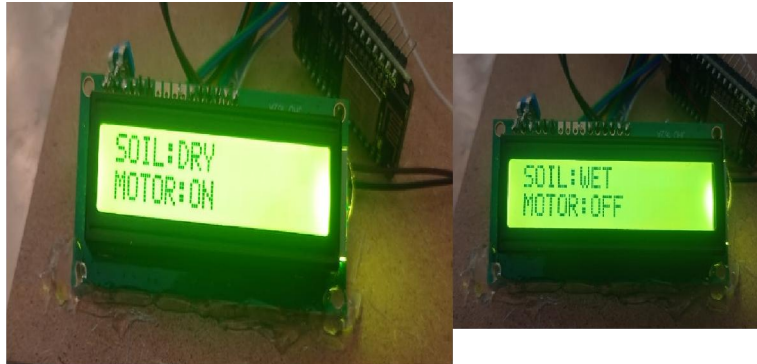
- LCD Display: "Soil : wet."

- Motor: OFF

If soil is dry:

- LCD Display: "Soil dry."

- Motor: ON



Boundary Crossing Alert:

If animals attempt to cross the boundary:

- LCD Display: "Animals detected."

- Buzzer: ON



FIRE SENSING STATUS:

If Fire not exist :

-LCD Display: "no fire safe"

-Buzzer: OFF

If Fire Exist :

-Buzzer ON

V. CONCLUSION

In conclusion, IoT-based solutions like Swatch Kisan hold immense promise for protecting agriculture from the threats posed by wild animals. By leveraging sensors, cameras, drones, and data analytics, Swatch Kisan enables farmers to detect and respond to animal intrusion in real-time, minimizing crop damage and losses.

The implementation of Swatch Kisan not only improves crop yields and farmer livelihoods but also contributes to sustainable agriculture practices by reducing the need for chemical deterrents and promoting wildlife conservation. As technology continues to evolve, the future of Swatch Kisan looks promising, with potential advancements.

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