PROTECTION OF CROPS AGAINST BIRDS AND ANIMALS

TEAM MEMBERS

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IDEA / SOLUTION

To implement a system to detect and deter birds and animals from damaging crops using **Arduino Uno, a camera, and AI-powered image recognition.**

- Motion sensor detects movement in the monitored area.
- Camera captures images of the intruder.
- iNaturalist app analyzes the image to identify the species.
- If identified as a bird or animal, the alarm and deterrent system activates.

TECHNICAL APPROACH

1. Sensor Integration: PIR sensors detect motion and trigger responses. Positioned strategically along steel wire fencing, they monitor for wildlife intrusion, activating alarms or cameras.
2. Alarm System: Upon detection, a harmless alarm sound is generated to deter animals. The alarm's intensity and frequency can be programmed through Arduino UNO for optimal results.
3. IR Camera Surveillance: An infrared (IR) camera captures images or videos when motion is detected. These visuals help monitor wildlife activity and evaluate the system's effectiveness.
4. Power Supply: The system is powered by batteries connected to sensors, cameras, alarms, and automatic feeders, ensuring continuous operation in remote locations.
5. Automated Feeding & Watering: To divert wildlife from crops, automatic feeders and water suppliers, controlled by the Arduino UNO, offer alternative food sources at safe distances from the farmland

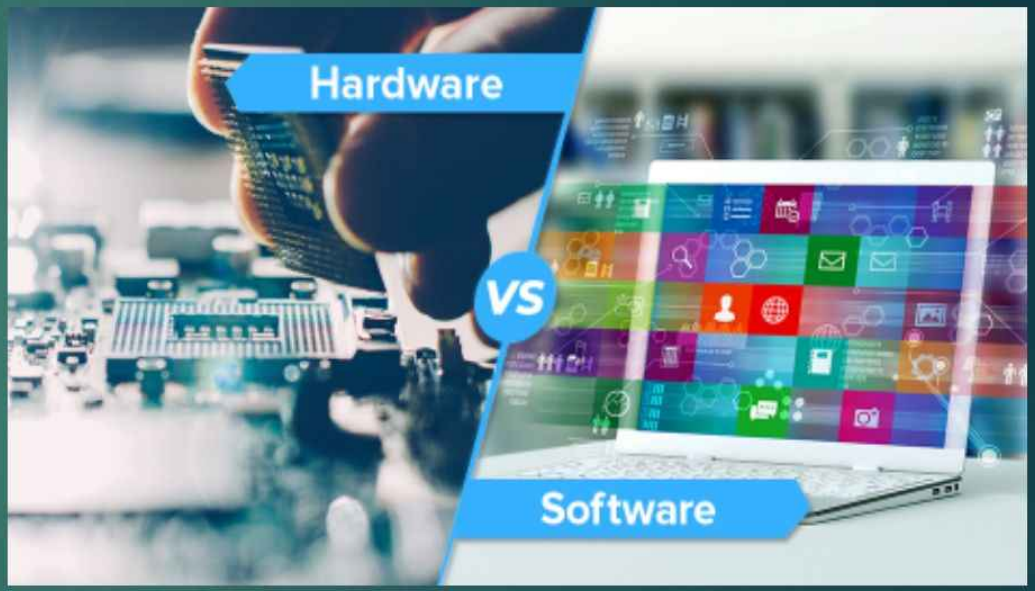
TECHNICAL APPROACH

HARDWARE:

- Arduino Uno
- IR Camera
- Motion Sensor
- Alarm

SOFTWARE:

- iNaturalist app
- Feedo app
- SQL Database



FEASIBILITY

- **Integration of Technologies:** The project is feasible as it combines established technologies motion sensors, cameras, and image recognition software (e.g., Inaturlist) which are readily available and have proven capabilities in monitoring and identifying wildlife.

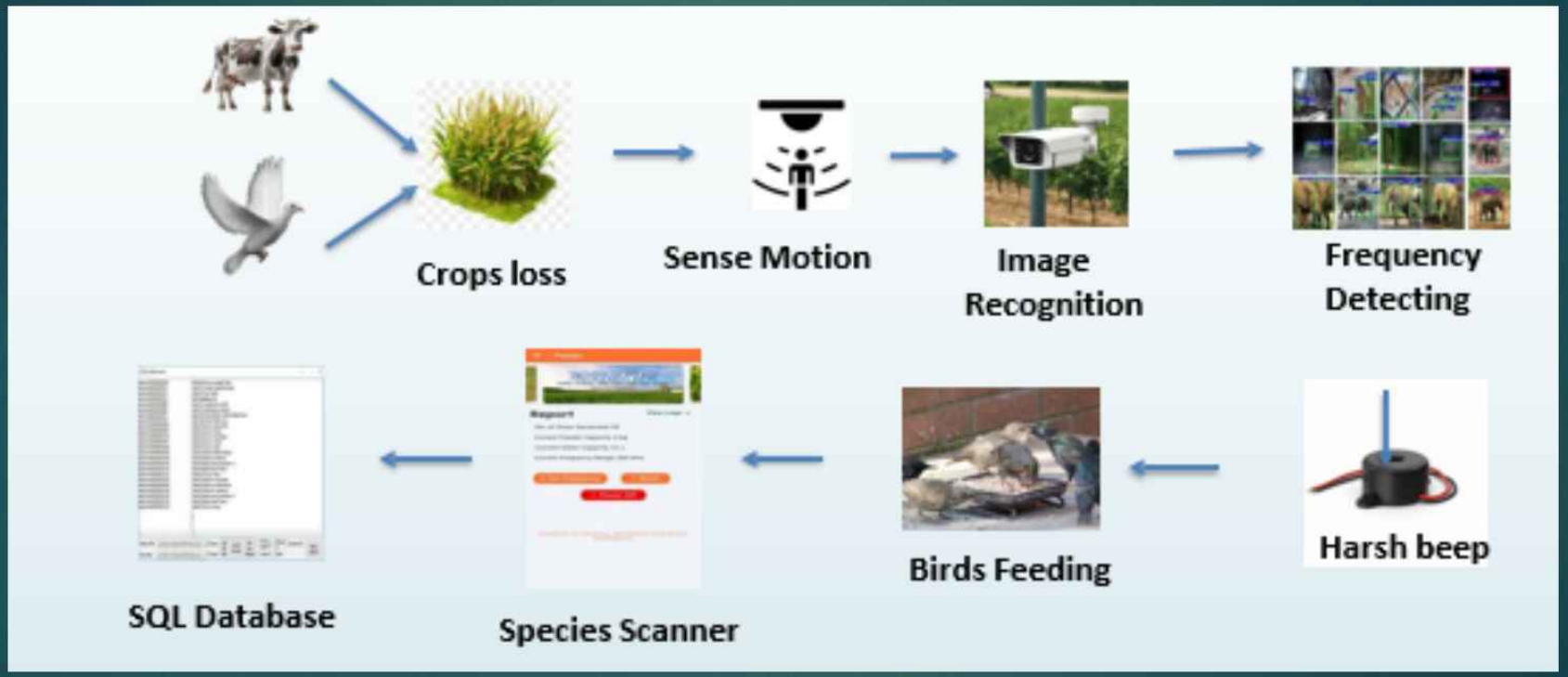
- **Automated Systems:** Implementing automated responses, such as activating alarms and providing food and water using Feedo, is technically feasible with current IoT and automation technologies, ensuring that the system can function effectively in real-world conditions.

VIABILITY

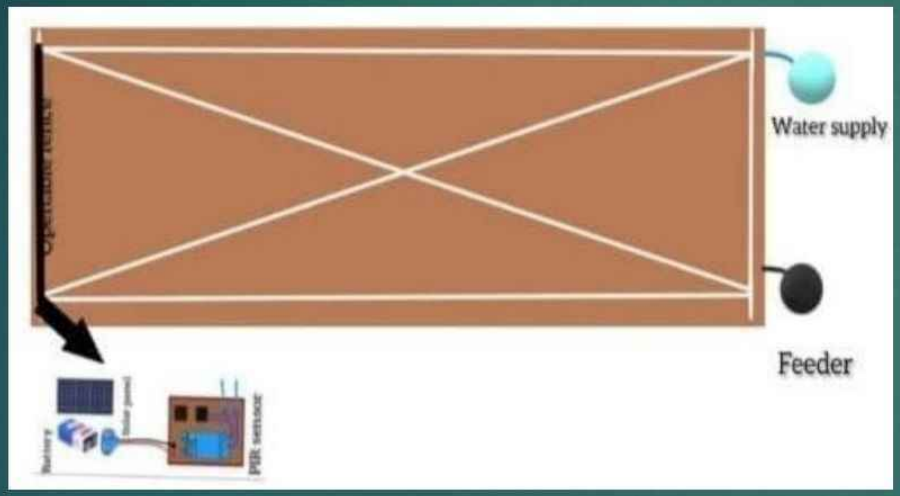
- **Economic Justification:** The project is viable as it addresses both crop protection and wildlife management, potentially reducing long-term costs associated with crop damage and creating value by maintaining ecological balance. The investment in technology may be offset by reduced losses and improved productivity.

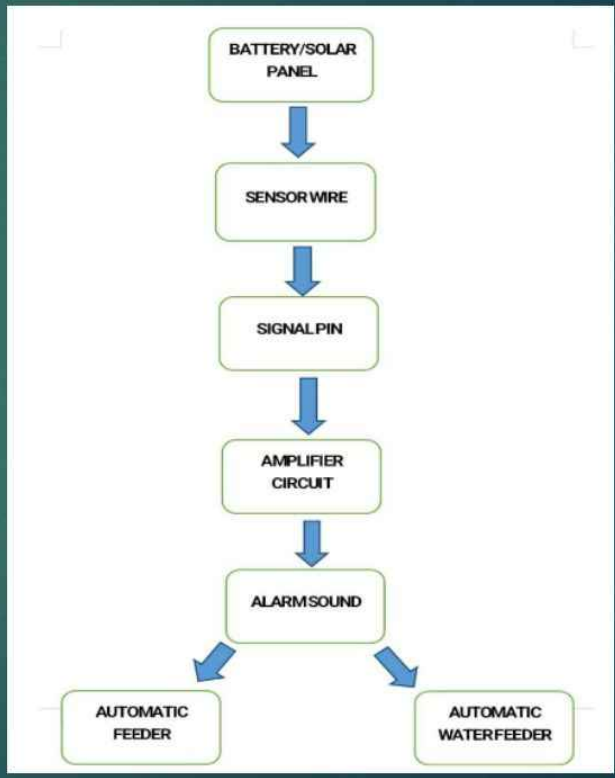
- **Scalability and Adaptability:** The system's design allows for scalability and adaptation to various farm sizes and types of wildlife, making it a versatile solution that can be tailored to different environments and expanded as needed

PROCESS FLOW ARCHITECTURE



FLOW CHART


Water supply
Feeder


BATTERY/SOLAR PANEL
SENSOR WIRE
SIGNAL PIN
AMPLIFIER CIRCUIT
ALARM SOUND
AUTOMATIC FEEDER
AUTOMATIC WATER FEEDER

IMPACT

- **Enhanced Crop Protection:** By using motion sensors and cameras to identify specific birds and animals, the project helps in accurately monitoring and managing wildlife that affects crops, reducing damage and losses Humane
- **Wildlife Management:** The system minimizes harm to wildlife by differentiating between species and providing targeted responses, such as food and water, rather than using harmful deterrents.

BENEFITS

- **Effective Crop Protection:** BADS safeguards crops from damage caused by birds and animals, reducing losses and increasing yields.
- **Real-time Monitoring:** Instant notifications and alerts enable prompt action to prevent damage.
- **Automated Deterrents:** Alarms and deterrents scare away detected species, minimizing crop damage.
- **Accurate Identification:** AI-powered computer vision ensures precise identification of birds and animals.
- **Customizable:** System can be tailored to detect specific species and adapted to various farm layouts.
- **Cost-Effective:** Reduces crop losses, minimizing financial losses for farmers.

REFERENCE

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Thank You