Digital Scarecrow

Multimedia Project Proposal

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Overview

Crop loss is quite common for farmers. Some can happen due to insects, fertility, access to water but the crop can loss also happens due to animals and birds. Farmers have their solution which is the scarecrow, but it doesn't seem to be working every time as animals get used to it. Punjab government also provides insurance for this issue "crop loss due to animal attacks". So we are trying to solve this problem using technology, specifically multimedia which could work effectively, be sustainable and be affordable for the farmers.

Goals

1. To scare the animals and birds away.
2. It should be sustainable and affordable for farmers.

Specifications

For this, we will be using two media (audio and video) as input and one media (audio) as output.

Working

Our first task will be to identify if there is an animal or birds present on the field. Then we have to narrow it down to:

- Whether it is animal or bird
- What kind of animal it is (like deer, lion, etc)

For this, we will use the images captured by a camera to identify the type of animal. Sometimes the camera may not be able to capture the animal, so to make it more robust, we are also using audio input which

can identify the animal by their sound. After we are able to identify the animal, we will play the specific sound which can scare that animal away.

Hardware

Every scarecrow will have a camera and a microphone as sensors with a simple motherboard with the required software built in to identify animals. Also, a speaker to scare animals away and to power all this, we will have a solar-charged battery which will power this all hardware.

Software

The camera will take a picture on certain intervals and identify the anomaly. If there is an anomaly in the picture, it will try to recognize the animal. The microphone will also capture small frames of audio and will do the same process. Then the results of audio and video and will be compared and will reach a conclusion on the type of animal. When the animal is identified, it will play that audio which scares that animal away.

Dataset

We will require two kinds of the dataset:

- For audio, we will require the labelled sounds of animals and birds
- For video, we will require the labelled images of animals and birds