Intelligent Bird Deterrent Network

Status:	Filled
Group Members:	MSE Group Members: Joey Boule, Brian Fingarson, Sasha Gunn BUS Group Members: Emily Chua, Ken Ying, Kevin Zhang
Sponsor(s):	
Supervisor(s):	Carolyn Sparrey, PhD, PEng, Assistant Professor, Mechatronics Systems Engineering

Project Description

We propose to design and build an intelligent bird deterrent network. Current bird deterrent methods rely on overwhelming force and/or an excessive usage of resources, requiring a multitude of persistent deterrents such as propane cannons, reflective flashers, and ultrasonic wailers. A wide variety of these systems must be used in conjunction to effectively deter birds for extended periods of time because the avians rapidly get used to each particular disturbance. Additionally, many of these systems may annoy neighbours of the property, and are unsuitable for use in more urbanized areas.

We hope to create a system that is capable of employing a variety of bird deterrent methods only when necessary – that is, only when birds are in the area. For example, propane cannons do not need to be fired every twenty minutes if no birds are in the vicinity. By detecting the presence of birds, and their numbers, it is possible to tailor the response of the system to minimize noise and visual pollution while still maintaining or enhancing effectiveness.

First Application: Field Use (Crops and Airfields)

A problem faced by farmers, small and large alike, is the invasion of the birds to their private agricultural areas. Frequently, bird populations will destroy small portions of crops before they can be harvested. Blueberries are an especially important field to maintain, as an example. Up to 10% of crops may be lost to avian populations each harvest (http://www.farmwest.com/book/export/html/870). On airfields, birds pose a particular nuisance and danger, where birds can get caught in the jet engines and cause a fire or failed takeoff.

Therefore, our proposed solution aims to create an intelligent bird deterrent network. The aim is to set up a detection and communication network to identify and relay signals if there are birds in the area. The signal will alert the deterrent which will in turn perform its functions and repel the birds in a timely manner.

Second Application: Urban Use

In urban settings, birds are a nuisance and a public health hazard. Flocks of birds may move into cities, creating noise issues. Many birds, such as pigeons, are known disease vectors, and the acidic content of bird feces is known to erode metals and concrete.

Therefore, a similar network could also be applied in other scenarios such as:

- Birds plaguing office parks such as at Willingdon Park in Burnaby
- Birds defacing cars in dealerships
- Birds flying into building windows

There may be other relevant uses for the product, and these will be continually investigated as the project progresses. Immediate Milestones

1. Determine Market Feasibility of Product
2. Selection of hardware including sensors, communications, and power
3. Establish communications network
4. Develop interface for communicating with COTS (cheap off the shelf) deterrent products such as propane cannons and ultrasonic wailers
5. Create a working prototype, and identify a test area for the prototype

Future Milestones

1. Find potential client or test market for our product
2. Explore alternative application for the product
3. Develop data collection software for sale to interested parties
4. Repeat the development to adapt the communication network and deterrent devices to the new environment