

1. Group 19

2. Problem statement:

Ben, a PhD student researching the yellow-billed hornbill, needs a cheap and efficient way to obtain temperature data inside the birds nests - which could provide vital information on the survival of the female and her chicks who are enclosed inside the nest.

3. Solution:

The ibuttons and dataloggers currently being used are extremely invasive to the birds, very expensive and have high failure rate. They also can't be interfaced with for easy access of data. Our solution is to investigate using a thermal camera to obtain temperature as well as visual data within the nest. The cameras will have to be pinhole wide angle cameras within the nest. They will use some embedded system, interfacing with a raspberry pi or arduino that. The device will have to be low powered so solar power will be investigated for use. The cameras data will be communicated via GPRS or another communication method to a server or data centre nearby. A means of repeating or extending the radio signal may be required based on the reception needs in the area.

4. Subsystems:

1. Microcontroller
 - 1.1 Communication
 - 1.2 Camera and sensing
2. Power
 - 2.1 Charging
 - 2.2 Monitoring
3. Physical aspects in and outside the nest
4. User interface