

IoT Proposal

By

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# Title

Tempneko: A Leopard Gecko enclosure monitoring application.

# IoT Category

Monitoring application

# Description

Tempneko will be a monitoring application where a user will be able to manage and control their reptile enclosure from anywhere in the world.

# Five W’s

* **Who**: The users of this application will be leopard gecko owners as well as some small lizard owners. This will primary be aimed for owners of leopard geckos as they need accurate readings and measurements but can be used for most lizard keepers.
* **Where**: This application can be used locally at home or can be used anywhere in the world via internet connectivity.
* **Why**: The reason why you will be using this system application is to monitor the wellbeing of your leopard gecko in its enclosure. Your life of your pet is serious and should always be a top priority to look after its needs and wellbeing as best as you can.
* **When**: A user would use this application daily as a form of controlling and reading the sensors that is in their enclosure. They can use this whenever else they feel like it as it will be a live feed that is updated to the user’s screen.
* **What**: Having this system integrated with their reptation will allow the user to see, control and watch over their pets using an android application. Leopard geckos need a very specific temperature and humidity to be comfortable and any change to their heating or light will give them un-necessary anxiety and stress. Here are some facts I found online that educates on how to care for healthy gecko (GoHerping, 2021).
  + **Enclosure Size:** 10+ for a juvenile while 20+ for an adult gecko.
  + **Temperature:** Approx. 90-degree hot spot, ideally use a heat mat with a thermostat. Allow for a cooler side so the gecko can thermoregulate.
  + **2**: Avoid exceedingly approximately 50% humidity.
  + **Lighting:** Give your gecko approximately 12 hours a day. Do not use night lights, UVB varies.

To this application there is some devices I do not own so I will be using LEDs to represent those items. I will be monitoring the temperature, pressure, and humidity, enabling a live webcam to be able to view the enclosure, the ability to turn on/off lights or heaters.

# System Architecture

* Raspberry Pi 4
* Sense Hat (Humidity, Pressure, and temperature)
* Raspberry Pi Camera Module
* Addressable RGB to mimic temperature on a heat mat
* Resistors
* Wires and connectors
* 5W power supply
* Google Firebase: store updated data on current humidity, pressure, temperature, light on/off, how long light has been on for
* Android Application

# References

I will use my knowledge from my previous mobile development elective to be able to develop an effective Android application.

I will be using the labs that we have done for this elective to be able to communication the Raspberry Pi with the SenseHat, LEDs, and buttons.

I will be using this example to help me set up and configure the Raspberry Pi webcam module: <https://projects.raspberrypi.org/en/projects/getting-started-with-picamera>

I will research what is needed to be able to connect the raspberry pi with the Firebase so that I can manipulate data to and from the cloud.

# References

GoHerping. (2021, 03 06). *goherping*. Retrieved from Leopard Gecko Care Guide: https://www.goherping.com/leopardgeckoenclosure