

Lizard Habitat Monitoring System

Project Overview

Problem

Lizard habitat conditions such as temperature and humidity are often monitored manually and inconsistently. Small deviations from ideal ranges can negatively impact a lizard's health, but these issues may go unnoticed until visible stress or behavior changes occur.

Goal

The goal of this project is to develop a system that continuously monitors a lizard's enclosure and provides clear reports on environmental conditions.

Why

- Reptiles are highly sensitive to environmental changes.
- Manual checks can miss gradual or temporary condition changes.
- Patterns over time are more informative than single readings.

This project focuses on **awareness and prevention**, not automated diagnosis or medical conclusions.

System Concept

- Sensors collect temperature and humidity data inside the enclosure
- ESP32 processes and transmits data
- Camera provides basic activity insight
- Raspberry Pi connected to Camera constantly runs motion detection to see where lizard spends time
- Some interface that can relay information

Learning With AI

I will use AI to learn how to use sensors to gather accurate data to be processed.

AI will assist with understanding datasheets, wiring diagrams, and example sketches, which I will test and modify on my own hardware.

I hope to learn better using AI how to perform sensor data analysis.

AI will help explain data-processing concepts, review example code, and help debug logic errors while I verify results myself.

Sprint 1

Goals

- Connect temperature and humidity sensor with ESP32
- Camera functionality and setting up zones
- Collect and log basic environmental data

Sprint 2

Goals

- Improve data reporting
- Connect system together
- Create UI for good data presentation

Conclusion

This project explores how IoT sensing combined with AI-assisted development can improve awareness of lizard habitat conditions and support better care through continuous monitoring and simple reporting.