

Internet of Things Pet Feeder Project

Masters degree in Computer Engineering



Departamento de
Informática

2022/2023

Summary

1. Introduction
2. Related works
3. System Architecture
4. Interoperability

Introduction

- Globally, 1 in 3 pets is homeless (Mars Project)
- The 2016 cat population in Portugal was estimated at 991,000 (D'Avila)
- ✓ This project seeks to establish secure feeding boxes for the area's stray cats, ensuring they have consistent access to nutritious food in a safe environment, therefore enhancing their well-being.



991,000 cat population



Avenida do Biribau, Covilhã
Near UBI



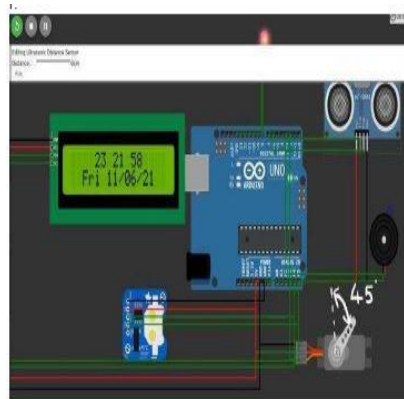
Feeding Box Project

Related works

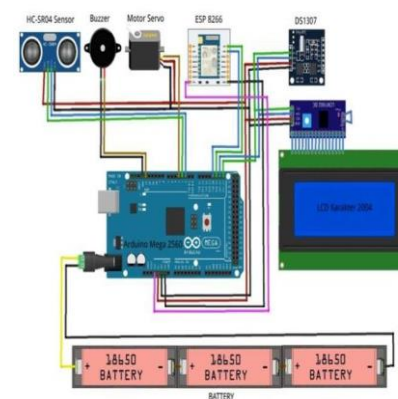
Component	1st Solution	2nd Solution	3rd Solution	4th Solution	5th Solution
Function	Remote Monitoring and Feeding	Monitoring and feed scheduling	Remote Monitoring and Feeding	Feeding and drinking management	Remote Monitoring Feeding, drinking and litter box
Microcontroller	Arduino Uno	Arduino Uno	Arduino Uno	Arduino Uno	Arduino Uno
Communication	ESP8266 WiFi	ESP8266 WiFi	ESP8266 WiFi	ESP8266-01	ESP8266 WiFi
Sensors	Real Time Clock, Load Cell, Servo Motor, TCS3200-color Sens., Camera	Real Time Clock, Load Cell, Servo Motor, Ultrasonic	Real Time Clock, Load Cell, Servo Motor, Ultrasonic	Real Time Clock, Load Cell, Servo Motor, Ultrasonic	Infrared Sensor(PIR) Load Cell, Servo Motor
Interface	Telegram App	Blynk App	Blynk App	Blynk App	Blynk App



First



Second



Third



Fourth



Fifth

Related works

	Smart Cities	Smart Homes
Focus	Enhance urban life on a large scale; address infrastructure, energy, transportation, healthcare, and services	Focus on individual residences; enhance convenience, security, and energy efficiency
Challenges	Manage and protect vast amounts of data, integrate diverse systems, ensure security and scale solutions	Ensure user privacy, integrate devices user-friendly, and maintain reliable connectivity
Impact	Affect entire communities and urban systems	Just individual living spaces



Smart Cities

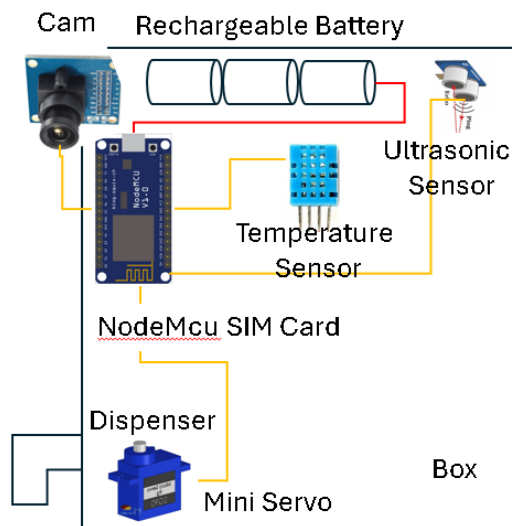


Smart Homes

System Architecture

Itens:

- Solar Cells
- NodeMcu Sim Card
- Rechargeable Battery
- Temperature and Humidity Sensor
- Mini servo motor
- Ultrasonic Sensor
- Camera



Box components

Server:

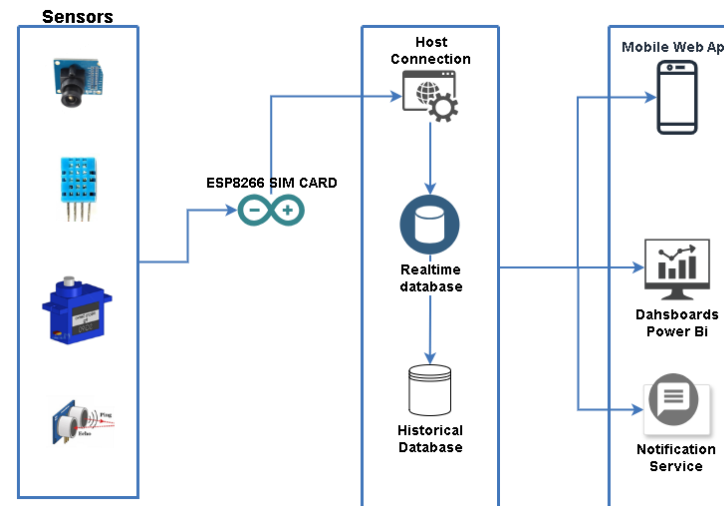
Net Core 8.0, Json, SQL Azure,
Azure App Service, Python

App:

React Native
Node

Database:

SQL Azure
Postgres



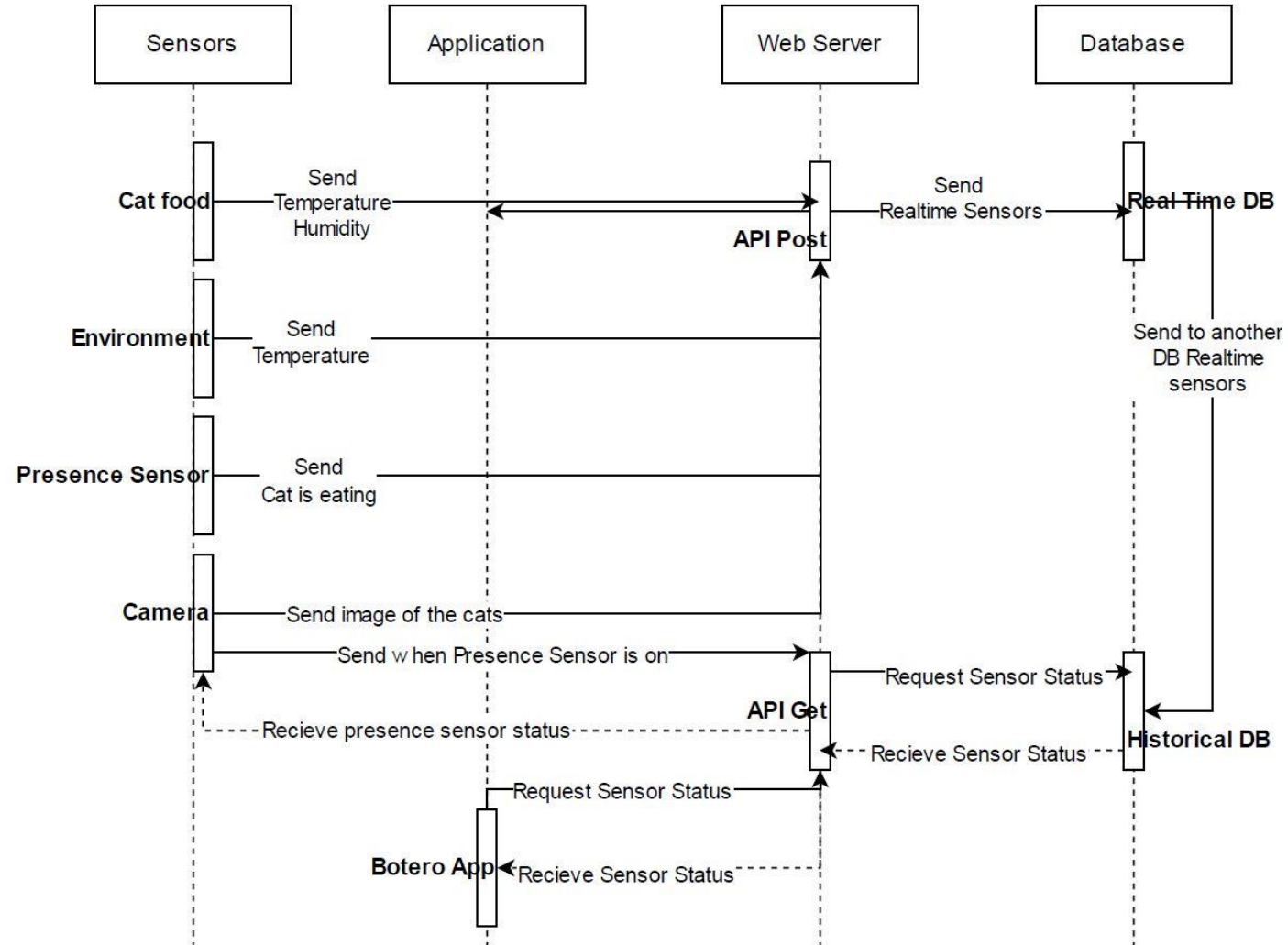
Architecture Design

sensor_table	
sensor_name	
value	
timestamp	

camera_table	
timestamp	
image	

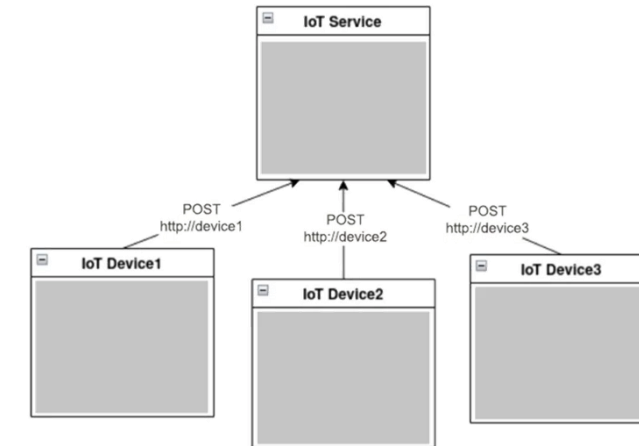
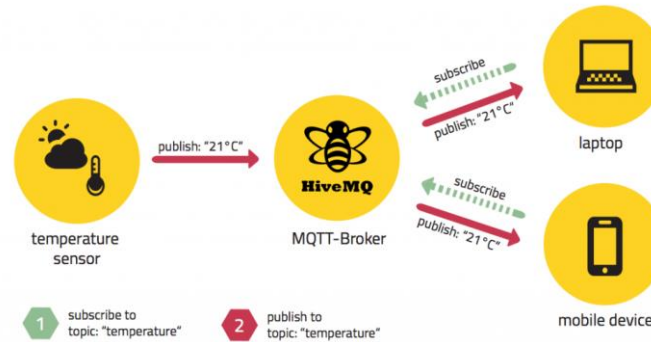
Database

System Architecture



Interoperability

The adoption of open standards is one way to ensure this interoperability, along with the use of application programming interfaces (APIs).



Thanks a million

<https://github.com/juscelior>

<https://github.com/renejerez>



Departamento de
Informática

2022/2023