
Automatic animals feeding machine

Software Design Document



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1. INTRODUCTION

1.1 Purpose

This software design document describes the architecture and system design of an Automatic feeding machine.

This Software Design Description is written for knowledgeable software professionals and designers.

intended audience for this document :

- Team
- Project facilitator
- Auditors and Reviewers

1.2 Scope

Using Arduino (ESP32) and some sensors (proximity or rf) to identify a unique 'pet' user trying to feed itself from the automatic machine. It can differentiate between several id holders in order to solve the problem of feeding habits and needs.

The system should also include an interface using Node-Red to allow a friendly interface and control patterns.

1.3 Overview

The Software Design Document is divided into 8 sections.

The sections of the Software Design Document are:

1. Introduction
2. System Overview
3. System Architecture
4. Data Design

2. SYSTEM OVERVIEW

The machine software will allow tracking the consumption behavior of the cats that are registered in the system, In addition, the system will be able to identify an anomaly in consumption behavior and warn about it By cross-referencing with the information stored in the database.

The software will know how to identify cats that are not registered in the system and thus prevent them from accessing the system i.e. will not provide for them food.

The software will analyze food intake behavior patterns and thus allow each animal a custom dish.

3. SYSTEM ARCHITECTURE

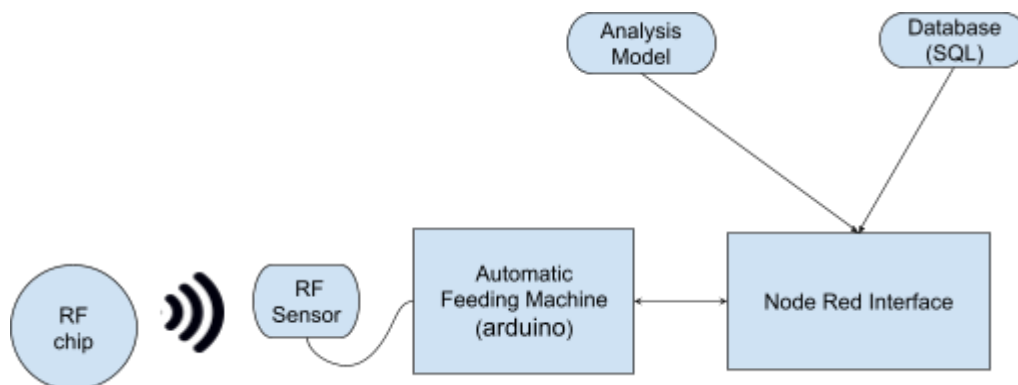
3.1 Architectural Design

Node-red - Interfaces all systems together in one common language .

Database - In the database, we will save all the information we collect about the animal that we will monitor, such as the last feeding time, animal id etc.

Arduino - An interface that aims to create a convenient and inexpensive environment for product development that combines software with electronics components

3.2 Decomposition Description



Class Diagram -need to complete

Object Diagram - need to complete

3.3 Design Rationale

It was important for us to implement the functionality of identifying the cat's food intake patterns,

And that's to avoid unnecessary food throwing and save user costs,

Functionality can be implemented using a database that will save the data and a model that will process and analyze the data .

To create the possibility of communication between several systems

We chose node-red, because it allows several different systems to "chat" with each other.

To write codes , compile and flash them to the hardware components we had to use the arduino development environment.

4. DATA DESIGN

4.1 Data Description

The objects are stored in one table, with the following columns :
the cat id , last time feeding , daily consuming food amount ect..

This database will be updated every several hours.

4.2 Data Dictionary

| cat id | meal time | meal date | meal_weight (g) | frequency |
|--------|--------------|-----------|-----------------|-----------|
| "111" | 8:00 | 1.1.2021 | 50 | 1 |