

Members:
Amadeo, Carl Marlo M.
Obero, Jeannelyn C.
Canonigo, Aljae O.

CPE461-H2

Project Title: Pet Feeding Automator

Project Description: The Pet Feeding Automator is a user-friendly, affordable device designed to simplify pet feeding by offering scheduled and customizable feeding times, efficient and smooth hardware controls, pet live stream and safety mechanisms to prevent food related issues. It provides peace of mind to pet owners while ensuring their pets receive consistent meals. The device's focus on durability and ease of use.

Objective: To provide pet owners with a reliable- user-friendly, and convenient solution for automating pet feeding, ensuring consistent meal times, and peace of mind in pet care.

System Capabilities: The system will include the following features:

- Scheduled Feeding
- Customizable Schedule
- Real-Time Clock (RTC)
- User Interface (buttons, LCD, and etc.)
- Pet Interaction and Monitoring
- Mobile App

Requirements:

1. Functional Requirements:

- Users should be able to Set and trigger automatic feeding at specific times.
- Users should be able to adjust feeding times to meet their pet's needs.
- The system should Implement user-friendly buttons, display, or LEDs for interaction and status updates.
- The system should provide live feeds or snapshots of the pet during meal times.
- The system must include a reliable Real-Time Clock (RTC) to accurately execute scheduled feeding times.
- The mobile app should provide a user-friendly interface for remote management of the Pet Feeding Automator.
- Users should be able to view the current feeding schedule, make real-time adjustments, and receive notifications or alerts related to feeding and system status.
- The Pet Feeding Automator should be easy to set up, requiring minimal technical expertise from the user.
- The user interface, both physical and mobile, should be designed for simplicity and clarity.

2. Non-functional Requirements:

- The system must operate reliably and consistently to ensure pets receive their meals on time.
- The system should ensure the user interface is intuitive and user-friendly for pet owners of varying technical abilities.
- The system should meet safety standards and regulations for pet-related devices to ensure pet well-being and user safety.
- The response time for user interactions through the mobile app or physical interface should be less than 5 seconds.
- The device and mobile app should adhere to established usability principles, ensuring that users can easily understand and navigate the interface without extensive training.

3. User Requirements:

- Users should be able to set up and operate the device easily, even without advanced technical knowledge.
- The mobile app should have a user-friendly interface that is easy to navigate and understand.
- The mobile app should provide real-time monitoring of pet interactions, live streaming, and the status of scheduled feedings.
- Users should be able to use their preferred brand of pet food without limitations.
- Users expect the Pet Feeding Automator to be durable and able to withstand the conditions of a typical household with pets.
- Comprehensive user documentation and including a user manual should be provided with the product.

4. Technical Requirements:

- The device should include a reliable Real-Time Clock (RTC) to maintain accurate time for scheduling.
- Implement a motor-driven feeding mechanism capable of dispensing precise portions of pet food.
- A durable and pet-safe casing for the device, resistant to moisture and physical tampering.
- Physical buttons for user input on the device.
- An LCD screen on the device to display feeding schedules, time, and date.
- Wireless connectivity (Wi-Fi or Bluetooth) for communication between the device and the mobile app.
- Compatibility with iOS and Android operating systems.

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5. Constraints and Assumptions:

- The development and production costs of the Pet Feeding Automator should be kept within a specified budget to ensure affordability for users.
- The device should operate within the constraints of standard household power sources, limiting the need for specialized power infrastructure.
- The mobile app's monitoring features depend on a stable internet connection, which may not be available in all areas, potentially limiting its functionality.
- Users are assumed to have a basic level of technical proficiency to set up and operate the Pet Feeding Automator, including using the mobile app.
- The system assumes a reasonable level of predictability in pet behavior, such as pets being present during scheduled feeding times.
- The assumption is made that users will have smartphones compatible with the Pet Feeding Automator's mobile app, running supported operating systems.
- The system assumes that users will have access to commercially available pet food and may not consider highly specialized or hard-to-find pet food.