**Title**: Smart Feeder: An IoT-Enabled Automated Feeding System for Pets

**Abstract**: Nowadays, pets are present in almost every house as a family member, and feeding them is as important as we humans eat. When the respective owner of the pet is not available then feeding them, food is a difficult task as the quantity of food may not be properly known by others, and over feeding may lead to health issues in the pet. A pet feeder is used to dispense a specified amount of food, in a bowl with less intervention of the owner, although the this is less time consuming, the owner finds it difficult when they have busy schedule, so our team has come up with an idea where we integrate Internet of Things with the pet dispenser. The Smart Feeder Mini project aims to develop an automated feeding system for pets using IoT technology. The system includes a feeder that dispenses food on a schedule set by the user through a mobile application. The device also includes sensors that monitor the amount of food remaining and notify the user when it is time to refill the feeder. The project utilizes an ESP32 microcontroller, a servo motor, The Smart Feeder project provides convenience and peace of mind to pet owners, ensuring their pets are fed on time and with the right amount of food. The architecture of the Remote Food Dispenser consists of three main components: a NodeMCU module, a food storage unit, and a mobile application. The NodeMCU module acts as the central controller, responsible for receiving commands from the mobile application and executing the necessary actions to dispense the food. It is connected to the food storage unit, which houses the food items securely and maintains their freshness. The mobile application serves as the user interface, enabling individuals to place orders, schedule delivery times, and monitor the dispensing process remotely.

1. **Introduction**: Pets have assimilated into our lives, and proper nourishment is crucial to their overall health and happiness. Nevertheless, it can be difficult to ensure proper feeding when pet owners are not around. The Smart Feeder, an IoT-based technology that automates pet feeding and ensures timely and precise food dispensing, is introduced in this paper.
2. **System Design and Components**

2.1 **Smart Feeder** **Architecture**: Three major parts make up the Smart Feeder system: a NodeMCU module, a food storage container, and a mobile application. As the central controller, the NodeMCU carries out feeding operations after receiving instructions from the mobile application. It is connected to the appliance that safely and efficiently preserves the freshness of the pet's food. The user interface for the mobile application allows pet owners to create timetables, keep track of food levels, and get notifications.

2.2 **ESP32 Microcontroller**: The Smart Feeder's ESP32 microcontroller acts as its central processing unit and is in charge of managing the feeding mechanism. It takes commands from the mobile application, figures out how much food is needed, and then manages the servo motor to dispense the precise amount of food.

2.3 **Servo Motor**: To correctly dispense the pet's food, a servo motor is used. The rotation angle of the servo motor is controlled by the microprocessor, enabling controlled and accurate food portion dispensing.

2.4 **Sensors**: To track how much food is still in the storage unit, the system can be equipped with a variety of sensors, such as weight sensors and infrared sensors. These sensors allow the system to alert pet owners when the feeder needs to be refilled..

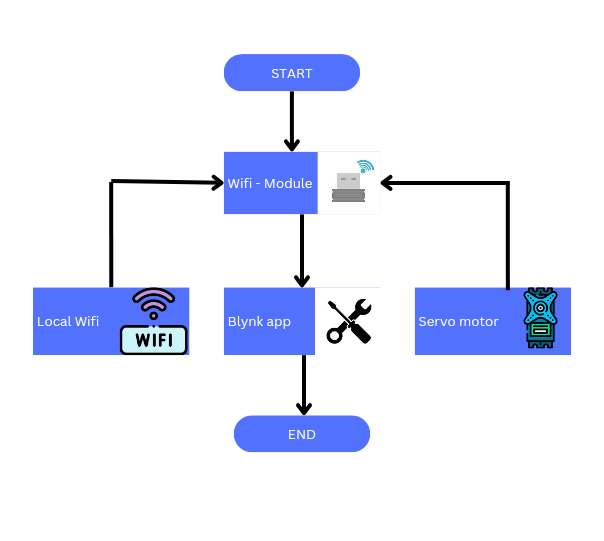


Figure 1 : Control Flow Diagram

1. **User Experience and Mobile Application**: Owners of pets can communicate with the Smart Feeder primarily through the mobile application. The process of feeding may be remotely seen, portion sizes can be changed, and feeding schedules can be defined. Dispensed portions, food levels, and refill notifications are all provided in real-time through the programme.
2. **Benefits and Implications**: The Smart Feeder offers several advantages to pet owners. It provides convenience, especially for busy individuals who may have irregular schedules. The automated feeding system ensures pets receive the right amount of food at the designated times, promoting their health and reducing the risk of overfeeding. Additionally, the IoT integration enables remote monitoring and control, allowing owners to stay connected with their pets even when physically absent.
3. **Conclusion**: The Smart Feeder presents an innovative IoT-enabled solution to address the challenges of pet feeding when owners are unavailable. By automating the process, the system ensures pets are fed on time with the correct portion sizes. The integration of the NodeMCU module, food storage unit, and mobile application provides a user-friendly interface for pet owners to manage feeding schedules and monitor food levels. The Smart Feeder brings convenience, peace of mind, and improved pet care to households, highlighting the potential of IoT in enhancing various aspects of our daily lives.