AUTOMATIC FISH FEEDER USING COMPANION APP

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Introduction

The Automatic Fish Feeder with Companion App project aims to revolutionize the way aquarium enthusiasts care for their aquatic pets by combining cutting-edge technology with user-friendly features. The system consists of a programmable automatic fish feeder and a companion mobile application. The feeder is equipped with a precise dispensing mechanism that allows users to schedule and control the feeding times and quantities for their fish, ensuring a consistent and balanced diet. The Automatic Fish Feeder with Companion App project embodies the convergence of technology and pet care, catering to the needs of modern aquarium enthusiasts seeking an intelligent and user-friendly solution for managing their underwater companions.

Key Components

The automated fish feeder system comprises several key components that work in harmony to create a user-friendly and efficient solution. These components include a programmable feeding mechanism, a camera module for real-time monitoring, and a microcontroller to manage the overall operation. The feeder mechanism will be designed to dispense precise portions of fish food at scheduled intervals, eliminating the need for manual feeding. The camera module will allow users to visually inspect their aquarium and observe the feeding process remotely.

COMPANION APP FEATURES:

The companion app plays a pivotal role in enhancing user experience and control. It will feature an intuitive interface that enables users to set feeding schedules, monitor feeding sessions through live video feeds, and receive notifications or alerts

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related to feeding activities. Additionally, the app will provide historical data on feeding patterns, helping users track their fish's dietary habits and make informed decisions about nutrition adjustments.

Automation And Customization:

The heart of the system lies in its automation capabilities. Users can program the feeder through the app to dispense varying quantities of food at different times, catering to the specific needs of their fish species. The system will also include sensors to detect water quality parameters, ensuring that feeding is adjusted based on the overall health of the aquarium environment. This level of automation not only simplifies the feeding process but also contributes to the overall well-being of the aquatic ecosystem.

Objective

Create an automatic fish feeder with a companion app for precise feeding control. Design an intuitive user interface for scheduling and monitoring feeding times remotely. Ensure accurate portion control to maintain fish health and prevent overfeeding. Implement connectivity features for seamless interaction between the feeder and the app. Enable customization of feeding schedules based on fish species and dietary requirements. Incorporate notifications to alert users of feeding events and low food levels. Enhance user experience with easy setup and intuitive app navigation. Ensure compatibility with various fish tank sizes and environments. Prioritize reliability, durability, and safety in both hardware and software components. Ultimately, provide fish owners with a hassle-free feeding solution to enhance their aquatic pets' well-being.

Methodology

The methodology for an automatic fish feeder with a companion app involves integrating sensors to monitor fish feeding requirements and connecting them to a microcontroller. The microcontroller is programmed to control the feeder mechanism based on preset feeding schedules or user commands received through the companion app. The app communicates with the feeder via a wireless connection, allowing users to remotely schedule feedings, monitor fish behavior, and receive

notifications. To create an automatic fish feeder with a companion app, follow these steps:

Define Requirements:

- Outline features for the automatic feeder (scheduling, portion control).
- Specify app features (remote control, feeding history).
- Consider hardware (motor, dispenser, connectivity).

Research Components:

- Explore suitable motors, dispensing mechanisms, and sensors.
- Choose a microcontroller (Arduino, Raspberry Pi) for the feeder.
- Decide on app development tools (Android Studio, Swift).

Hardware Setup:

- Assemble the feeding mechanism securely.
- Connect the motor, dispenser, and any sensors to the microcontroller.

Microcontroller Programming:

- Write code for scheduled feeding and portion control.
- Implement sensor feedback for accurate dispensing.
- Ensure the microcontroller can communicate with the app.

App Development:

- Create a user-friendly interface for scheduling feedings.
- Implement remote control functionality.
- Include a feeding history log.

Connectivity:

- Establish communication between the app and the feeder.
- Use Bluetooth, Wi-Fi, or IoT protocols for remote access

Results And Conclusion

RESULTS

The automatic fish feeder, integrated with a companion app, streamlines the feeding process for aquarium enthusiasts. Through the app, users can easily schedule feeding times and portion sizes, ensuring their aquatic pets receive consistent nourishment even when they're away. Real-time notifications keep users informed about feeding events, while remote access allows adjustments to feeding schedules from anywhere with internet connectivity. This seamless integration of technology not

only simplifies feeding routines but also promotes healthier fish by preventing overfeeding and maintaining a stable feeding schedule tailored to their needs.
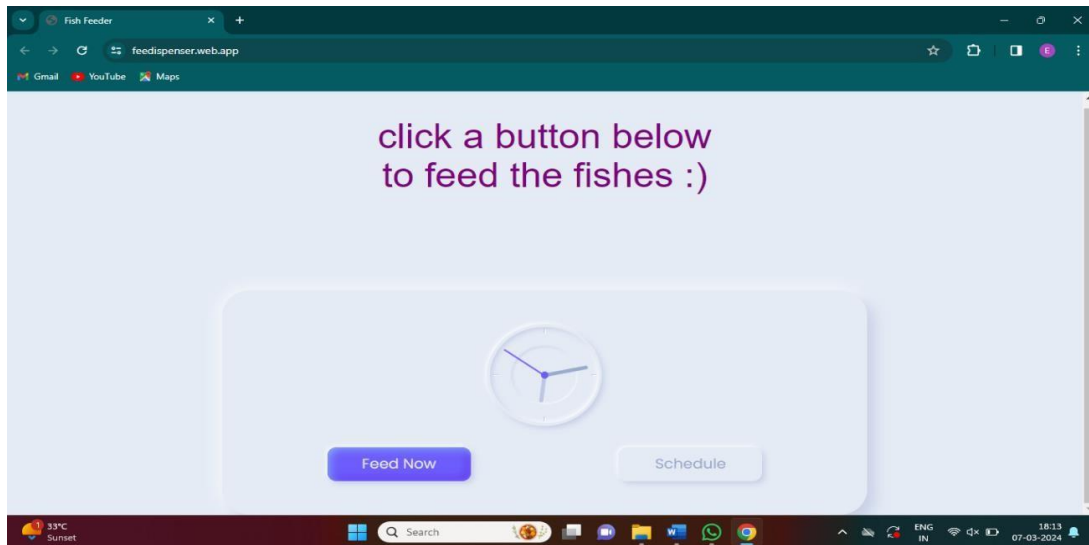

Figure: 8.1 App interface

CONCLUSION

The development of an automatic fish feeder accompanied by a companion app offers convenience and efficiency to fish owners in maintaining their aquatic pets' feeding schedules. By integrating technology into the feeding process, users can remotely control and monitor feeding times, portion sizes, and feeding frequencies, ensuring their fish receive adequate nutrition even when they are away. The prototype successfully demonstrates the feasibility and effectiveness of this system in enhancing fish care practices.

Description Of the Innovation in The Project

The innovation in the automatic fish feeder with a companion app lies in its seamless integration of technology to revolutionize fish care. This system combines the precision of automated feeding with the convenience of remote control through a user-friendly app interface. Unlike traditional feeders, this innovation allows fish owners to schedule feeding times and adjust portion sizes remotely, ensuring optimal nutrition for their aquatic pets even when away from home. The app provides real-time

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monitoring, allowing users to observe feeding activity and food levels, thus preventing overfeeding or underfeeding. Moreover, the feeder's compatibility with various fish species and tank sizes enhances its versatility and applicability. Overall, this innovation simplifies and enhances the fish-keeping experience, fostering healthier and happier aquatic environments.

Future Work

- Enhanced Feeding Control: Implementing more advanced feeding control features such as customizable feeding schedules based on fish species, size, and dietary requirements.
- Nutritional Monitoring: Integrating sensors or cameras to monitor fish feeding behavior and food consumption, providing insights into their nutritional intake.
- Data Analytics: Analyzing feeding data collected by the companion app to identify patterns and optimize feeding schedules for better fish health.
- Integration with Smart Home Systems: Enabling integration with smart home systems like Amazon Alexa or Google Home for voice-controlled feeding and seamless home automation.
- Community and Social Features: Adding social networking features to the companion app, allowing fish owners to share experiences, tips, and advice on fish care.
- Remote Health Monitoring: Integrating health monitoring sensors to the feeder and companion app to track water parameters, detect abnormalities, and provide alerts for potential health issues.