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Review on Automatic Pet Feeding System

Rugved Bhagat [1], Akshay Bamnote[2], Nisha Satpute[3], Dr. P. D. Khandait[4]
[1, 2, 3]*Students,* [4]*HOD, Dept. of Electronics and Telecommunication, K.D.K. College of Engineering, Nagpur*

Abstract: ***Automatic pet feeding systems have gained popularity in recent years due to the convenience they offer to pet owners in ensuring regular and timely feeding of their pets. This paper provides a comprehensive overview of automatic pet feeding systems, including their design, functionality, benefits, and potential drawbacks. The study examines various types of automatic pet feeding systems available in the market, ranging from basic gravity-fed dispensers to more advanced programmable devices with portion control and scheduling capabilities. Furthermore, the paper discusses the technological aspects of automatic pet feeding systems, such as the use of sensors to detect food levels, timers for scheduling feedings, and remote access features for monitoring and controlling feeding sessions. The benefits of automatic pet feeding systems, including the ability to maintain feeding routines, prevent overfeeding, and reduce the risk of obesity in pets, are also highlighted. Moreover, the study addresses potential drawbacks of automatic pet feeding systems, such as technical malfunctions, reliance on electricity or batteries, and the lack of human interaction during feeding times. Recommendations for pet owners considering investing in an automatic pet feeding system are provided, emphasizing the importance of choosing a system that suits their pet's dietary needs, size, and feeding habits. Overall, this paper serves as a valuable resource for pet owners, veterinarians, and researchers interested in understanding the functionality and implications of automatic pet feeding systems in enhancing the well-being and health of companion animals.***

I. INTRODUCTION

The bond between humans and pets transcends mere companionship. Our furry friends become integral members of our families, their well-being deeply woven into the fabric of our own. Yet, amidst the demands of modern life, ensuring their optimal health can be a constant juggle. One crucial aspect, often overlooked or fraught with challenges, is nutrition. Maintaining consistent feeding schedules can be a balancing act, particularly for busy pet owners. Traditional automatic feeders offer a semblance of convenience, but often lack the adaptability and intelligence to cater to individual needs. This can lead to overfeeding, inconsistent routines, and ultimately, compromised pet health.

This project embarks on a journey to revolutionize pet care through an innovative Internet of Things (IoT)-powered feeding system. It transcends the limitations of conventional solutions by merging two distinct yet complementary modes.

Imagine the peace of mind that comes with managing your pet's diet from anywhere, anytime, through intuitive mobile app which empowers you to do just that. Schedule precise feedings tailored to your pet's unique needs, whether it's a breakfast kibble sprinkle or a hearty dinner after an afternoon walk. Remotely adjust portion sizes based on activity levels or dietary requirements, ensuring they receive the optimal amount of nourishment. And with real-time consumption monitoring, you'll always be in the know, even when miles away. This level of granular control and real-time data empowers responsible pet ownership and allows you to adjust care according to your pet's individual needs.

But what if you're unexpectedly delayed, or your pet develops an unpredictable schedule? Don’t worry.! Our Intelligent Automation system seamlessly transitions to its adaptive automatic mode. Imagine a robot, not simply dispensing food at predetermined times, but intelligently adapting to your pet's presence. This is where cutting-edge sensor technology shines. Precise proximity sensors detect activity near the feeding station, ensuring food is dispensed only when your pet is around, promoting healthy eating habits, minimizing food waste, and ensuring their nutritional needs are consistently met.

II. PROBLEM IDENTIFICATION

Pet owners frequently struggle with maintaining consistent and timely feeding schedules for their pets, particularly when their daily routines are unpredictable or when they are absent from home. Manual feeding processes can result in irregularities, potentially leading to pets being either underfed or overfed, which can negatively impact their health and well-being. Furthermore, many pet owners desire real-time monitoring and control over their pets' feeding routines. To tackle these challenges, there is a need for an IoT-powered Automatic Pet Feeding System that enables remote scheduling, monitoring, and customization of feeding cycles.

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III. OBJECTIVES

1) Develop a robust and efficient mechanism for automated and scheduled pet food dispensing.
2) Integrate IoT technologies to enable remote monitoring and control of the pet feeding system through a user-friendly interface.
3) Develop an intuitive and user-friendly interface, accessible through a mobile application or web portal, to enable pet owners to easily schedule feeding times, adjust portion sizes, and receive real-time updates on their pet's feeding status.
4) Incorporate sensors or mechanisms to ensure the safety and well-being of pets, such as anti-jamming features, food level sensors, and the ability to monitor pet activity or behaviour during feeding.
5) Provide customizable settings to accommodate different dietary needs, feeding schedules, and pet preferences, allowing pet owners to tailor the feeding system to the specific requirements of their pets.
6) Design the system to operate efficiently and conserve energy, considering power-saving modes, automated shutdown during inactivity, and the use of energy-efficient components to minimize environmental impact and operating costs.

IV. LITERATURE REVIEW

Research on automatic pet feeding systems underscores the critical need for precision and reliability in dispensing accurate portions, ensuring optimal nutrition for pets.

S. Subaashri,et al. [1]This paper proposes that Pets need special treatment and special care. Due to nowadays busy lifestyle, this task is not as simple as it used to be. The goal of this work is to introduce, design and implement a smart pet system. The interaction between human and physical devices and devices in the real world is gaining more attention and requires a natural and intuitive methodology to employ.

According to this idea and living well, life has been a growing demand. Thus, how to raise pets in an easy way has been the main issue recently. This study examines the ability of computation, communication, and control technologies to improve human interaction with pets by the technology of the Internet of Things.

Harshini Manimaran et.al.[2] This paper proposes the use of technology to tackle the issues being faced by pet owners. Pet owners who are working individuals and live alone face a huge problem, they are not able to feed their pets on time. The method approached to solve this issue was to construct an IoT-based Automatic Pet feeder, it is one of the new technologies used for feeding pets and maintaining the diet of their pets by feeding them on time. It is built with Raspberry Pi 3B+ as its core. The automatic pet feeder will automatically dispense a predetermined amount of food and water to the bowl as per the settings made by the owner.

A.O. Aransiola et.al.[3] Most pet's owners cannot stay at home to feed their pets several times a day or impatience in feeding them due to their busy schedules.

This paper is an automatic pet feeder system which feeds pet with food and water at predetermined time interval. The feeder system has a battery backed-up DS 1307 real time clock that is set to the current time and the feed dispensing time. At the set time, the feed is dispensed until its weight measured with a load cell reaches the preset weight value based on the consumption level of each pet. The system also dispenses water to the pet at the specified time. The firmware of the system was developed in C language using a MikroC ® development environment. The experimental results obtained The automatic pet feeder system has highly made pet feeding easy and cost-effective.

Vineeth S .et.al. [4] The paper has a project design aimed at which pet owners can feed their pet even without their presence or Interferences, like older versions of pet feeder. This system makes use of the Digital Image Processing technique for implementation. In the project, if RFID Receiver detects the pet, the Camera captures the pet's image and processes it. If the image is matched with the stored data, a servo motor and solenoid valve will be activated to dispense food and water, respectively.

Sunil K. et.al.[6]

The goal of this work is to introduce, design and implement a smart pet system. The interaction between human and physical devices within the globe is gaining more attention and it requires a natural and intuitive methodology to use. According to this idea and living well, life has been a growing demand.

Thus, the way to raise pets in a straightforward way has been the most issue recently. This study examines the flexibility of computation, communication and control technologies to enhance human interaction with pets by technology of the internet of things. This work addresses the advance through the pet's application of the flexibility of location-awareness, and to assist pet owners raise their pet on the activity and eating control easily.

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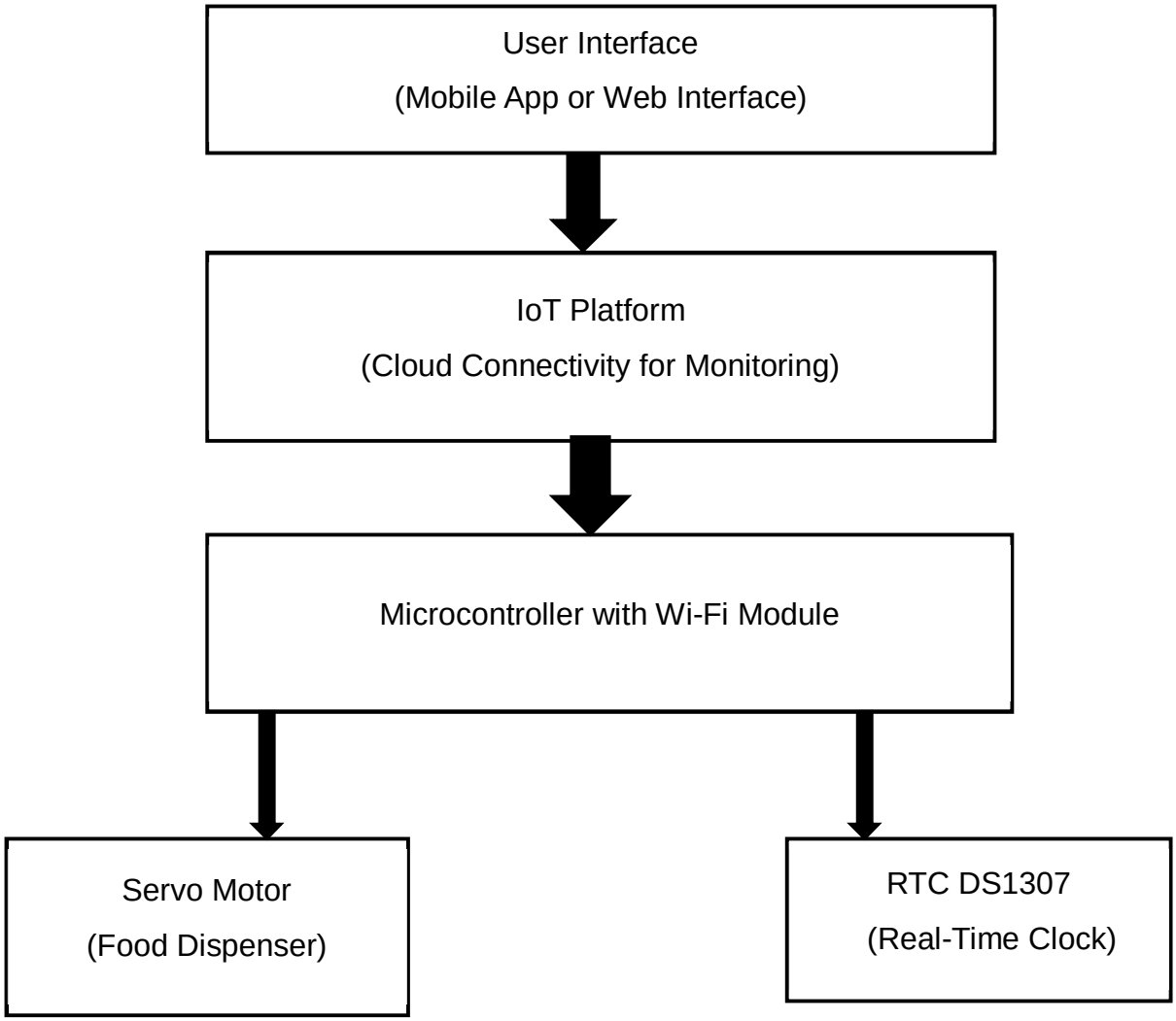
V. FLOW DIAGRAM



VI. ADVANTAGES

1) The integration of a servo motor in the system enables precise control over the portion sizes dispensed to pets.
2) Automatic pet feeding systems offer convenience by allowing pet owners to schedule and automate feeding times.
3) The use of IoT technologies, such as the ESP8266 and cloud connectivity, allows pet owners to monitor and control the feeding system remotely.
4) The inclusion of an RTC DS1307 ensures accurate timekeeping and scheduling. Pets thrive on routine, and scheduled feeding contributes to their overall well-being by providing a consistent and predictable feeding routine.
5) This helps in preventing food spoilage, ensuring that pets receive high-quality and nutritious meals.

VII. CONCLUSION

In conclusion, the Automatic Pet Feeding System represents not just a solution for convenient pet care but a paradigm shifts in how technology can enhance the bond between humans and their animal companions. As we continue to refine and expand upon this system, the journey of innovation and responsible technology use in pet care unfolds, promising a future where our furry friends benefit from the best that technology has to offer.

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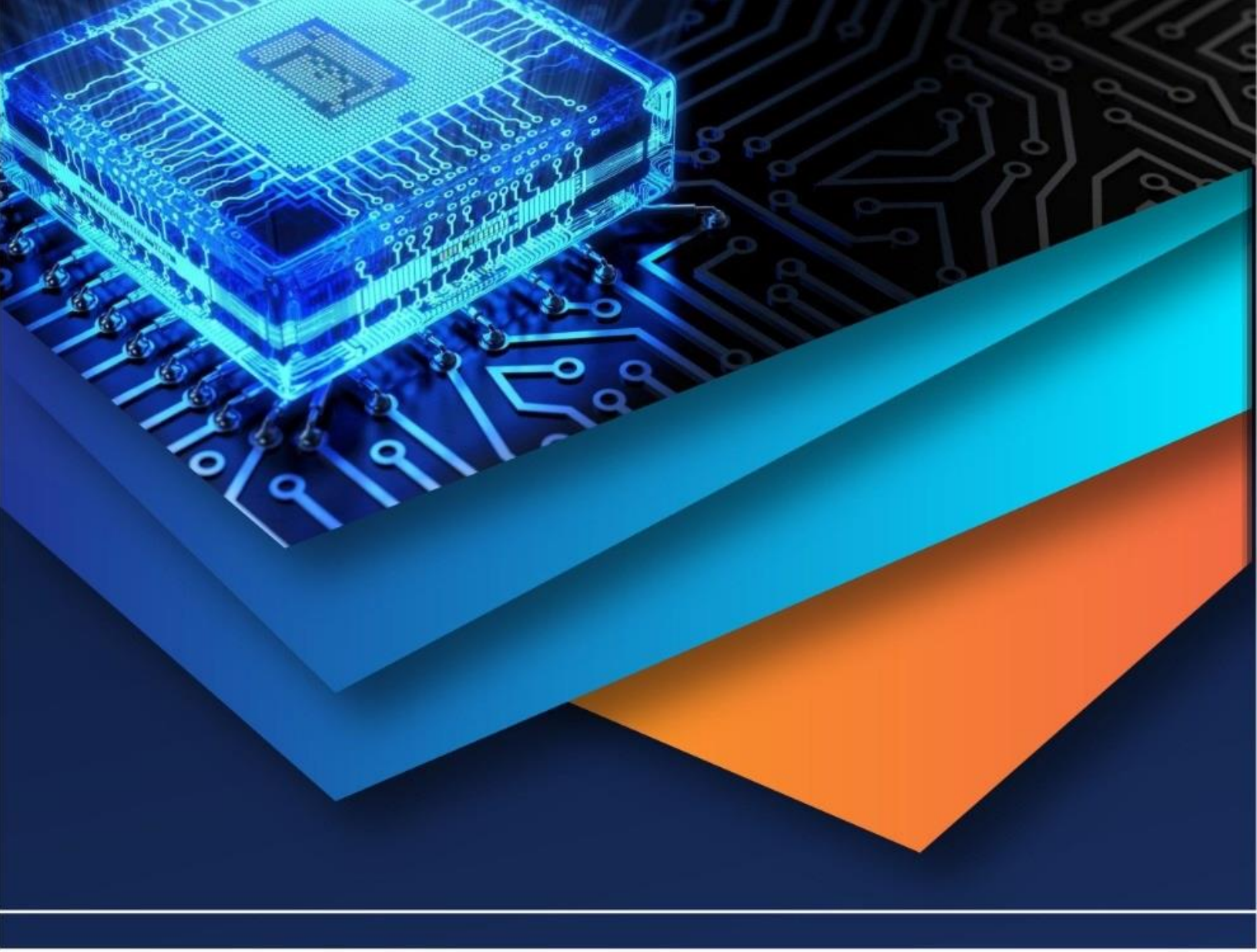

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