IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AUTOMATED PET CARE SYSTEM

Varsha V[1], Rachana S[2], Priyadarshini R[3], Naganandhan H M[4], Vijay Kumar S[5],

Assistant Professor[1], Students[2, 3, 4, 5]

Department of Electrical and Electronics Engineering[1, 2,3,4,5]

Vidya Vikas Institute of Engineering and Technology, Mysuru, India

Abstract: The IoT-based Smart Home Automation system leverages the ESP8266 microcontroller and various sensors to provide a seamless and efficient way to manage household devices remotely via the Blynk app. This system integrates temperature, humidity, gas leakage detection, and light sensors to monitor environmental conditions and control appliances accordingly, enhancing convenience, security, and energy efficiency. Users can remotely access and control their home environment through the Blynk app on their smartphones, receiving real-time updates and alerts. The ESP8266 facilitates wireless communication between the sensors and the Blynk app, enabling users to automate tasks such as adjusting thermostats, switching lights on or off, and monitoring home security. This innovative approach to home automation not only enhances the user experience but also contributes to a smarter, more connected living space.

Index Terms **- IoT, NodeMCU, pet care, Servo Motor**

I. INTRODUCTION

In recent years, the proliferation of Internet of Things (IoT) technology has catalyzed transformative shifts across various facets of daily life, and one area experiencing significant evolution is pet care. Pet owners often grapple with the challenge of ensuring their furry companions are adequately fed and monitored, particularly in their absence. Traditional pet feeders, while serving a basic purpose, offer limited functionality and lack remote monitoring capabilities, leaving pet owners anxious about their pets' well- being when away from home. To address these pressing challenges and enhance the pet care experience, this project proposes the development of an IoT-based pet feeder and monitoring system utilizing NodeMCU and ESP32 microcontrollers.

At its core, this innovative system harnesses the capabilities of IoT technology to empower pet owners with the ability to remotely manage feeding schedules and monitor their pets in real-time, all facilitated through an intuitive mobile application interface. By integrating NodeMCU or ESP32 microcontrollers, servo motors for precise food dispensing, and webcams for live video streaming, the proposed system offers a holistic solution that transcends the limitations of conventional pet care methods. The motivation behind this project stems from the recognition of the profound bond between pets and their owners, and the desire to alleviate the stress and uncertainty associated with pet care during periods of absence. Whether due to work commitments, travel obligations, or other engagements, pet owners often find themselves torn between fulfilling their responsibilities and ensuring their pets' welfare. This project seeks to bridge this gap by leveraging IoT technology to provide pet owners with peace of mind and enhanced control over their pets' care routines.

In delineating its objectives, this project aims to achieve several key milestones. Firstly, it seeks to design and develop a robust IoT infrastructure capable of supporting remote pet feeding and monitoring functionalities. Secondly, it endeavors to create an intuitive and user-friendly mobile application interface that enables seamless interaction with the system. Thirdly, it aims to integrate advanced features such as

scheduling algorithms and real-time notifications to optimize the pet care experience further. The significance of IoT technology in pet care cannot be overstated. By seamlessly connecting physical devices and sensors to the internet, IoT facilitates unprecedented levels of automation, control, and connectivity, thereby revolutionizing traditional pet care practices. From remotely dispensing precise portions of food to monitoring pets' behaviors and environment in real-time, IoT- enabled pet care systems offer unparalleled convenience, efficiency, and peace of mind to pet owners worldwide. In summary, this introduction has outlined the motivation behind the project, delineated its objectives, discussed the significance of IoT in pet care, and provided an overview of the proposed system architecture and functionality. Through the fusion of innovative technology and empathetic design, this project endeavors to redefine the paradigm of pet care, fostering healthier, happier relationships between pets and their owners.

II. METHODOLOGY

The objective of this project is to design and implement an automated pet care system that allows pet owners to remotely feed their pets and monitor them in real-time using a mobile application. Pet owners will be able to remotely feed their pets by sending commands through the Blynk application. The NodeMCU or ESP32 will receive these commands and control the servo motor to dispense the appropriate amount of pet food. Pet owners will be able to monitor their pets in real-time using the Blynk application. Live video streaming from the webcam will allow pet owners to check on their pets' activities and well-being from anywhere with an internet connection. The Blynk application will provide a user-friendly interface for pet owners to interact with the system. It will include controls for feeding the pets and viewing live video streams, as well as Feedback mechanisms to provide status updates and notifications. The hardware Components will be connected and configured according to the project requirements. This will involve connecting the servo motor and webcam to the NodeMCU or ESP32 and ensuring they are powered correctly. Firmware will be developed for the NodeMCU or ESP32 using the Arduino IDE. The firmware will include code to handle communication with the Blynk application, control the servo motor for feeding, and capture video from the webcam. A mobile application will be developed using the Blynk platform. The application will include controls for feeding the pets and viewing live video streams, as well as features for receiving notifications and status updates.

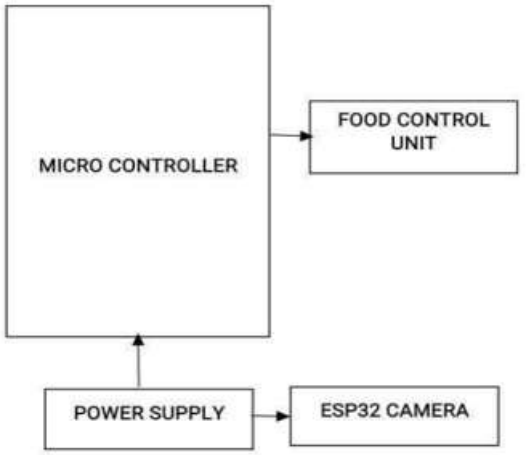

Fig 1: Block Diagram

III. COMPONENTS & DESCRIPTION

ESP8266 Wi-Fi Module: A low-cost microcontroller with built-in Wi-Fi capabilities. The NodeMCU (Node Microcontroller Unit) is open-source software and hardware development environment built around an inexpensive System-on-a- Chip (SoC) called the ESP8266. The ESP8266, designed and manufactured by Espressif Systems, contains the crucial elements of acomputer.

ESP32-CAM is a low-cost ESP32-based development board with onboard camera, small in size. It is an ideal solution for IoT application, prototypes constructions and DIY projects. The board integrates Wi-Fi, traditional Bluetooth and low power BLE, with 2 high-performance 32-bit LX6 CPUs. It adopts 7-stage pipeline architecture, on-chip sensor, Hall sensor, temperature sensor and so on, and its main frequency adjustment ranges from 80MHz to 240MHz.

Arduino IDE: For programming the ESP8266: The node MCU comes pre-programmed with Lua interpreter, but you don’t have to use it! Instead, you can use the Arduino IDE which may be a great starting point for Arduino lovers to familiarize themselves with the technologies surrounding the IoT.

Blynk App: For creating the user interface on a smartphone. Blynk is a comprehensive software suite

that enables the prototyping, deployment, and remote management of connected electronic devices at any scale.

Servo motor: A servo motor is a rotary actuator that allows for precise control of angular position. It consists of a motor coupled to a sensor for position feedback. It also requires a servo drive to complete the system. The drive uses the feedback sensorto precisely control the rotary position of the motor.

Thetemplateisusedtoformatyourpaperandstylethetext.Allmargins,columnwidths,linespaces,andtextfontsarepres cribed;pleasedonotalt erthem.Youmaynotepeculiarities.Forexample,theheadmargininthistemplatemeasuresproportionatelymorethanis customary.Thismeas urementandothersaredeliberate,usingspecificationsthatanticipateyourpaperasonepartoftheentireproceedings,andnotas anindependentd ocument.Pleasedonotreviseanyofthecurrentdesignations.

IV. ADVANTAGES

- A personalized pet-keeping experience involves deeply understanding and responding to your pet's unique personality,needs, and preferences, fostering a strong, intuitive bond and shared joy throughout your lives together.
- Pet owners no longer need to worry during business trips or vacations, as personalized pet care services ensure theirpets receive the same level of attention, comfort, and care as they would at home.
- With innovative multi-pet feeding systems, pet owners no longer need to purchase separate feeders, as these devicescan automatically manage and dispense food for multiple pets efficiently.

V. APPLICATIONS

- Busy Pet Owners: Automated pet care systems allow busy pet owners to manage feeding, exercise, and monitoringtheir pets remotely, ensuring their well-being despite hectic schedules.
- Multi-Pet Households: Advanced feeding systems can individually cater to each pet’s dietary needs in multi-pethouseholds, reducing the complexity of meal management.
- Pet Day-care Centers: Day-care centers for pets benefit from automated monitoring and feeding systems, enabling staffto focus more on interactive care and playtime.
- Veterinary Clinics: Automated health monitoring tools in veterinary clinics can continuously track vital signs andactivity levels, assisting in accurate diagnosis and treatment.
- Pet Hotels and Boarding Facilities: Pet hotels utilize automated systems to provide consistent care and feeding formultiple animals, ensuring each pet’s comfort during their stay.
- Senior or Disabled Pet Owners: Assistive technologies help senior or disabled pet owners manage daily pet care tasks,making it easier to maintain their companionship.
- Large Animal Farms: Automated feeding and monitoring systems on large animal farms ensure efficient managementof livestock, improving health and productivity.
- Research Institutions: In research institutions, automated pet care systems ensure consistent and humane treatment ofanimals, enhancing the accuracy of study results.
- Pet Foster Care: Foster caregivers use automated systems to manage the care of multiple animals simultaneously,ensuring each one receives the proper attention.
- Smart Homes: Integrated smart home systems allow pet owners to monitor and interact with their pets remotely,ensuring their safety and comfort at all times.

IV. CONCLUSION

The IoT-based pet feeder and monitoring system represents a significant advancement in the realm of pet care technology. By integrating NodeMCU or ESP32 microcontrollers, servo motors, webcams, and the Blynk platform, this project offers pet owners a convenient and effective solution for remotely feeding and monitoring their pets. Through the development of custom firmware, mobile applications, and integration of hardware components, the system provides pet owners with the ability to remotely control feeding schedules, dispense precise portions of food, and monitor their pets in real-time through live video streaming. This not only enhances convenience for pet owners but also ensures the well-being and health of their pets even when they are away from home. The project addresses the evolving needs of pet owners by leveraging IoT technology to offer features such as remote access, real-time monitoring, and intuitive user interfaces. By providing pet owners with greater control and visibility over their pets' care, the system enhances the bond

between pets and their owners and contributes to overall pet welfare. Moving forward, further enhancements and refinements can be made to the system, such as integrating additional sensors for monitoring pet health parameters, implementing machine learning algorithms for personalized pet care, and expanding compatibility with other IoT platforms.

Additionally, considerations for scalability, power efficiency, and data security will be essential for the continued success and adoption of IoT-based pet care solutions. Overall, the IoT-based pet feeder and monitoring system exemplify the potential of IoT technology to revolutionize pet care practices, offering pet owners peace of mind and ensuring the well-being of their beloved companions in today's connected world

REFERENCES

[1] https://www.embedded.com

[2] M. Rohs and B. Gfeller, "Using Camera-Equipped Mo-bile Phones for Interacting with Real-World Object," Proceedings of Advances in Pervasive Computing, April 2004, pp. 265- 271

[3] Madhu R, Addula Swetha, Sanjana Dharmavar, Tejashwini V J, Vidhya Shree N "Smart Pet Monitoring and Feeder UsingIOT" IJARSCT ISSN 2581-9429, Volume 3, Issue 7, May 2023.

[4] S. Subaashri, M. Sowndarya , D.K.S. Sowmiyalaxmi , S.V.Sivassan, C. Rajasekaran "Automatic Pet Monitoring And Feeding System Using IOT" International Journal of ChemTech Research, ISSN: 0974-4290, Vol.10 No.14, pp 253-258, 2017.

[5] Jiten Kulaikar, Dhanshree Kurade, Anamika Sawant, Pooja Sthawarmath "IoT Based Automatic Pet Feeding And Monitoring System" International Journal of Modern Developments in Engineering and Science, VOL. 2, NO. 4, APRIL 2023, Page No 24-27