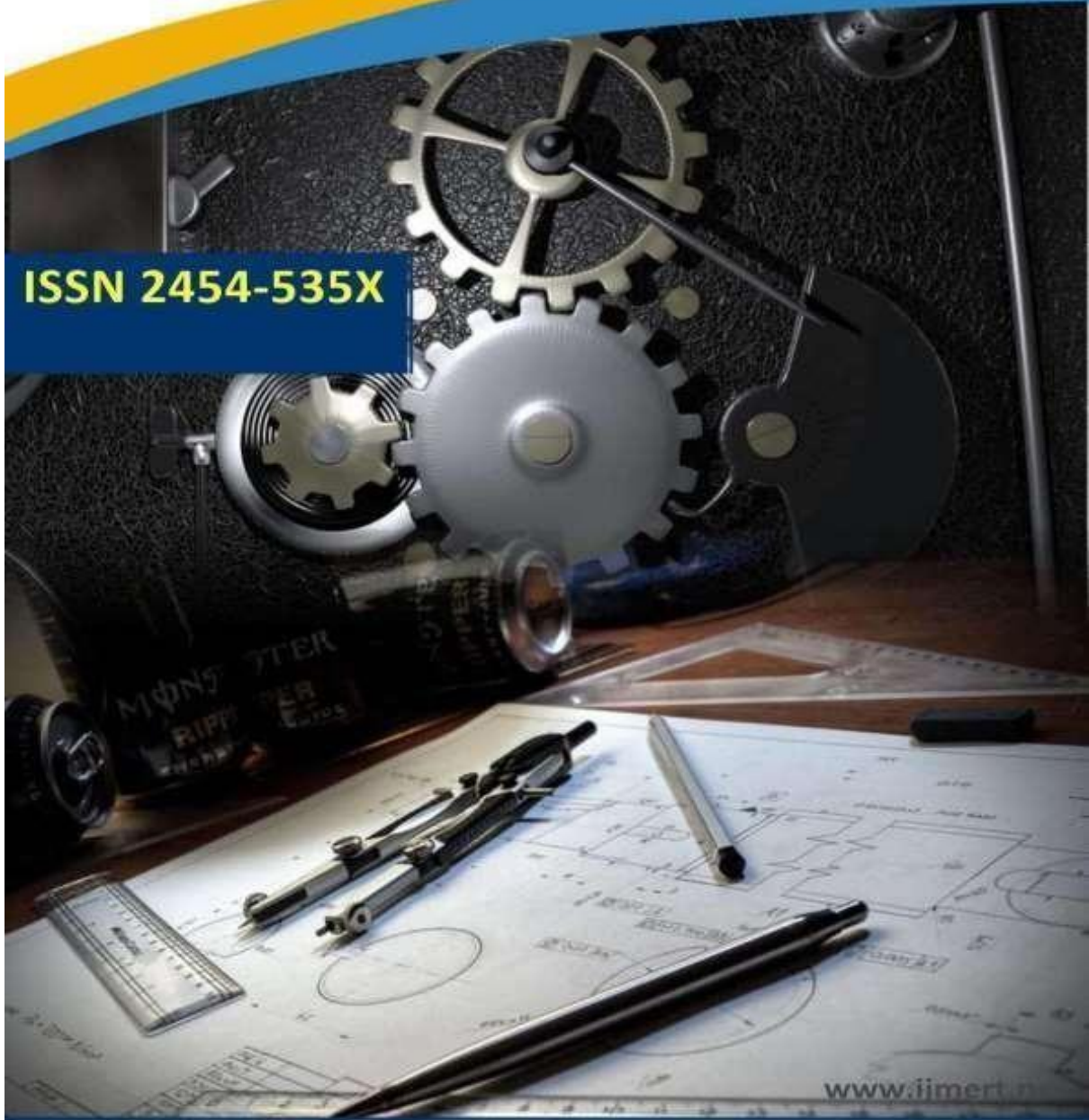




International Journal of
Mechanical Engineering Research and Technology

ISSN 2454-535X



www.ijmert.net

Email ID: info.ijmert@gmail.com or editor@ijmert.net

CLOUD BASED SMART PANTRY SYSTEM USING IOT

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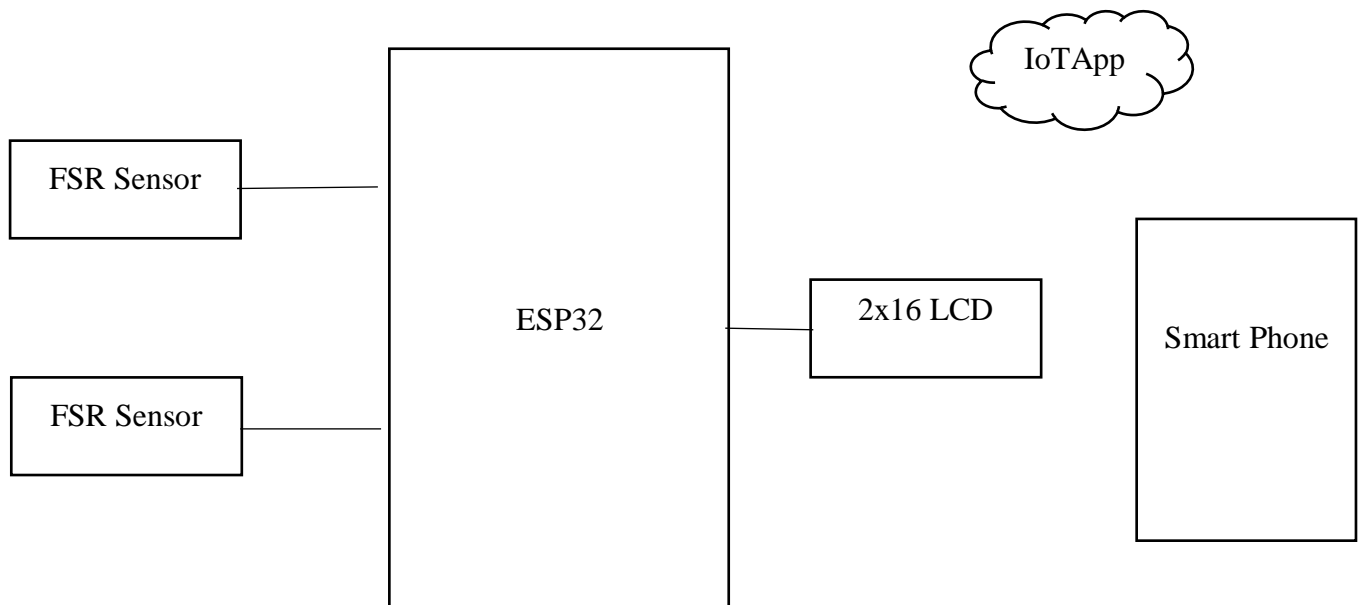
ABSTRACT

With the development of the Internet of things (IoT), many tasks are automated. The system aims to make the daily tasks of humans in the kitchen easier. This system provides IoT-based Smart Pantry level monitoring using the Internet of things. The containers are fitted with sensors. These are used to gather data about the stock level of items in the container. This data is collected and stored in the cloud. The data is continuously updated. The information includes the changes of weight in regular intervals of time. This system enables a user to view the level of items in a container from any place. The system alerts the user if the container's level goes below minimum weight. It also sends the message to the shopkeeper to place the order of a particular item.

INTRODUCTION

The idea of the IoT Based Smart Pantry System permits the common person to keep the track of commodities in stock and additionally to apply the automation to retrieve the info of the items in a pantry. In this international of upcoming technologies, there are a few pantries that have used motor-pushed cabinets for the reason of gaining access to meals purely. But there isn't any device that might track each stock and automate the grocery gadgets retrieval. This undertaking proposed system has paved the manner such that it maps a few quantities of increasing educational territory of the patron's meals wastage through systematically reviewing the empirical research on meals waste practices in addition to distilling elements that foster and hinder the era of meals waste at the family degree and affords a higher technique to keep away from meals waste through right and good enough utilization of ingredients. Mapping the opportunities of the waste era has made us apprehend the family practices and additionally has

helped to layout the automated kitchen pantry. To meet the necessities of announcing, that your pantry will replicate your cooking style, this undertaking system has evolved the device of monitoring the supply of groceries and making orders in case of necessity. In that manner, preparing your pantry consistent with types of ingredients is a vital task, so you can be aware of things. Root groceries: millet, green gram, Bengal gram, black gram on the whole and also there are numerous groceries to be mentioned withinside the pantry and we can discover the real garage and the info amount of an object for a particular length and notify the one's info in chart illustration in Blink cloud.



LITERATURE SURVEY

Design and Architecture of Cloud-Based Smart Pantry Systems:

Investigate research papers and articles that discuss the design principles and architecture of cloud-based smart pantry systems.

Look for studies that describe the integration of IoT devices, sensors, microcontrollers, communication protocols, cloud platforms, and user interfaces to enable smart functionalities such as inventory management, food tracking, and recipe suggestions.

IoT Devices and Sensors for Pantry Monitoring:

Review literature on IoT devices and sensors used in cloud-based smart pantry systems for monitoring food inventory.

Explore studies that discuss the deployment of RFID tags, barcode scanners, weight sensors, temperature sensors, and humidity sensors to track food items stored in the pantry.

Data Collection and Transmission:

Examine research papers and articles that discuss data collection and transmission mechanisms in cloud-based smart pantry systems.

Look for studies that describe how sensor data is collected, processed, and transmitted to cloud servers using wireless communication protocols such as Wi-Fi, Bluetooth, Zigbee, or MQTT.

Cloud Platforms for Data Storage and Processing:

Investigate literature on cloud platforms used for data storage and processing in smart pantry systems.

Explore studies that discuss the integration of cloud services such as AWS (Amazon Web Services), Microsoft Azure, Google Cloud Platform, or IBM Cloud for storing pantry inventory data, analyzing consumption patterns, and generating personalized recommendations.

Machine Learning and Predictive Analytics:

Review research papers and articles that discuss the use of machine learning and predictive analytics in cloud-based smart pantry systems.

Look for studies that describe how machine learning algorithms are trained on historical pantry data to predict consumption patterns, suggest recipes, and optimize inventory management strategies.

User Interface and Mobile Applications:

Examine literature on the design of user interfaces and mobile applications for cloud-based smart pantry systems.

Look for studies that describe the development of mobile apps, web portals, or voice assistants to enable users to access pantry inventory data, receive alerts about expiring items, and place grocery orders from anywhere.

Security and Privacy Considerations:

Investigate literature on security and privacy considerations in cloud-based smart pantry systems. Look for studies that address concerns such as data encryption, access control, authentication mechanisms, and compliance with privacy regulations to protect user information stored in the cloud.

PROPOSED SYSTEM

The smart Pantry device can be used in households, Railway Pantry etc.. that is equipped with Force Sensitive Resistor to track the quantity of items in pantry.

Now, When an item is placed in a container which is attached to FSR, the whole circuit is triggered and the weight of the item will be displayed on LCD.

The Data is sent to the “Blynk IoT” app in the form of Analog values and weight of the item in Kilograms(Kgs).

Based on the weights obtained in app, we can identify which items were finished and which items were slow moving items and track them easily.

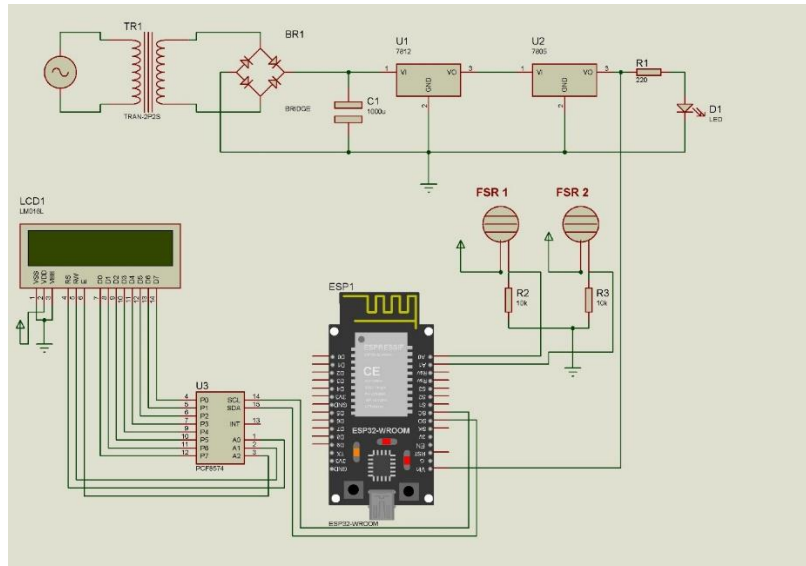


Figure.2 Schematic Diagram

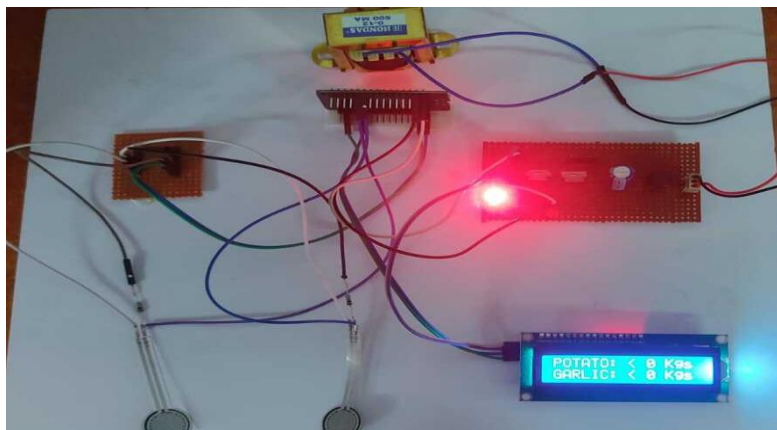


Figure.3 Working Kit

RESULTS

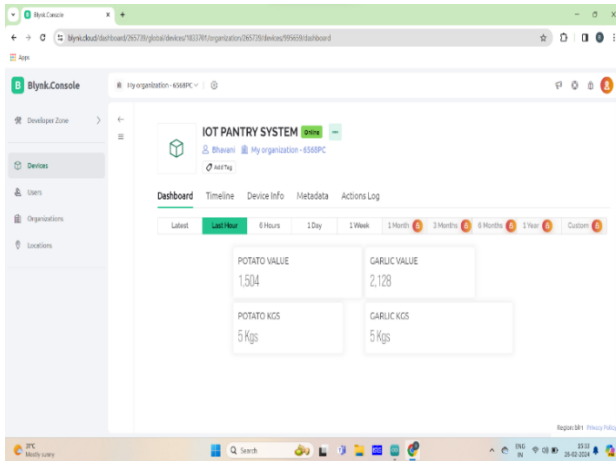


Figure.4 Displaying two FSR values on Blynk

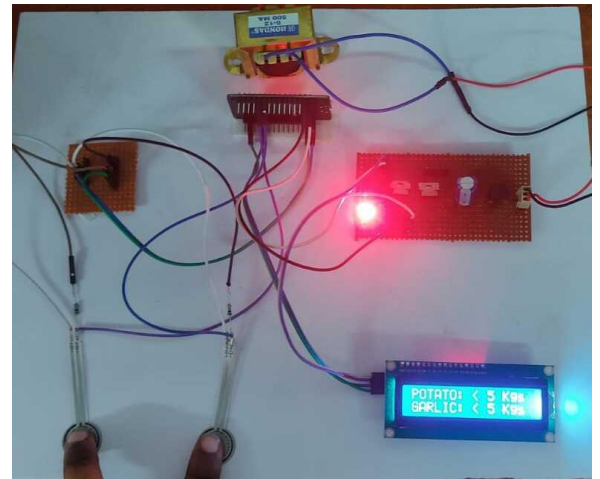


Figure.5 Displaying two FSR values on LCD

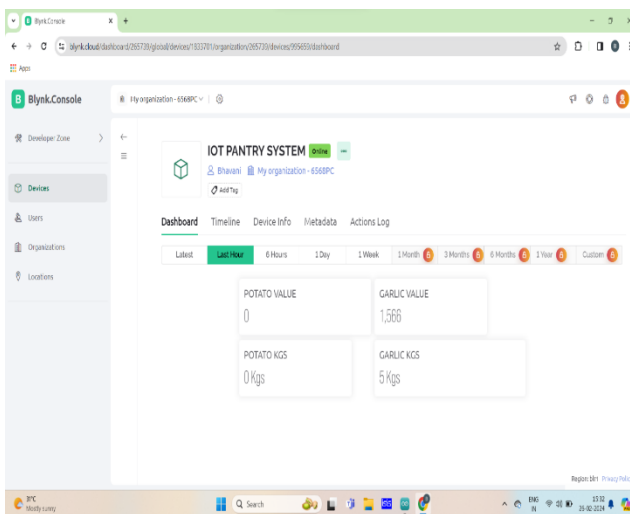


Figure.6 Displaying One FSR value on Blynk

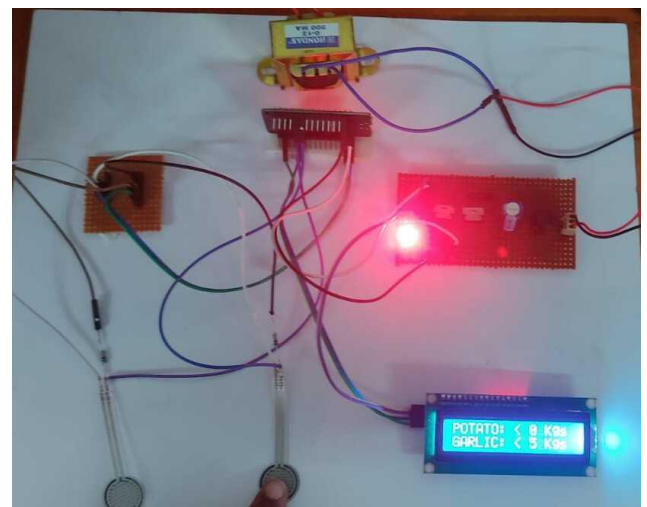


Figure.7 Displaying one FSR value on LCD

APPLICATIONS

Real-time tracking: Monitor pantry contents in real-time, eliminating the need for manual checks and surprise empty shelves.

Expiry alerts: Receive notifications when items are nearing expiry, preventing food waste and saving money

Demand forecasting: In restaurants ,itanalyze inventory data to predict customer demand and improve product availability.

ADVANTAGES

Reduction in Food Waste: By tracking expiration dates and consumption patterns, it prompts users to consume or donate food before it spoils, significantly reducing waste.

Reduced food safety risks: Monitor food temperatures and expiration dates to ensure food safety compliance.

Cost savings: Prevent food waste, optimize inventory levels, and reduce unnecessary purchases.

Personalized experience: Customized shopping lists, recipe suggestions, and targeted promotions.

Personalised Recommendations:Can offer personalized meal suggestions based on inventory, dietary preferences, and nutritional goals, enhancing the eating experience.

CONCLUSION

In conclusion, the development and implementation of a cloud-based smart pantry system utilizing Internet of Things (IoT) technology signifies a significant advancement in the management of household food supplies and kitchen inventory. This system, by harnessing the power of IoT devices and cloud computing, offers a sophisticated solution that enhances convenience, reduces waste, and promotes efficient grocery shopping and inventory management.

The core benefits of this system are multi-fold. Firstly, it provides real-time monitoring and management of pantry items, enabling users to keep track of their food supplies remotely. This reduces the likelihood of overbuying or underbuying, leading to cost savings and minimizing food waste. Secondly, the integration with cloud services ensures that data regarding pantry inventory is always accessible and up-to-date, facilitating seamless synchronization across

multiple devices. This feature is particularly beneficial for families or individuals managing their groceries together.

The adoption of this technology also opens avenues for further innovations, including integration with smart kitchen appliances, online grocery services, and dietary management tools. Such integrations can create a comprehensive kitchen ecosystem that supports not just inventory management but also meal planning and preparation, tailored to the dietary preferences and needs of the users.

However, the widespread adoption of cloud-based smart pantry systems will depend on overcoming challenges related to privacy, data security, and the initial cost of setup. Ensuring the security of user data and building trust will be crucial for the success of these systems. Additionally, making the technology affordable and user-friendly will determine its accessibility and popularity among a broader audience.

In essence, a cloud-based smart pantry system using IoT represents a forward-looking approach to kitchen and food management. It embodies the potential of IoT and cloud computing to make everyday tasks more efficient and environmentally friendly. As technology evolves and these systems become more integrated into our daily lives, they promise to transform our relationship with food and kitchen management in profound ways.

FUTURE SCOPE

While cloud-based smart pantry systems already offer a glimpse into the future of food management, future scope is vast and their potential extends far beyond just tracking inventory and suggesting recipes. Here are some exciting possibilities for the future scope of this project:

- Weight and image recognition: More sophisticated sensors could not only measure weight but also identify specific items visually, leading to even more precise inventory management and automated tasks, like tracking expiration dates.
- AI and Machine Learning: Integrating AI and machine learning can personalize the experience further. The system could learn user preferences, suggest customized recipes, and optimize grocery lists based on dietary goals and health data.

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