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SMART KASHAYA MAKING DEVICE USING ARDUINO

Sista.Venugopala Krishna
Electronics and Communication Engineering
Sreenidhi Institute Of Science And Technology
Hyderabad , India
svgk1008@gmail.com

Imran Sohail
Electronics and Communication Engineering
Sreenidhi Institute Of Science And Technology
Hyderabad , India
Imran07sohail@gmail.com

B.Madhusudhan
Electronics and Communication Engineering
Sreenidhi Institute Of Science And Technology
Hyderabad , India
madhubuddolla903@gmail.com

Y. Sreenivasulu
Associate Professor , Electronics and Communication Engineering
Sreenidhi Institute Of Science And Technology
Hyderabad , India
sreenivasuluy@sreenidhi.edu.in

Abstract—Efficiency and cost-effectiveness are crucial components of modern businesses. To achieve these goals, companies need to streamline their processes by leveraging technology. With this in mind, we introduce the Smart Kashaya Machine (SKM) project, which involves the design and installation of decoction vending machines that vend Ayurvedic Kashaya via a mobile application. By combining software and machines, the SKM offers a convenient and portable solution for preparing Kashaya. The mobile app allows users to control the strength and flavor of their Kashaya, similar to how they control their smart devices. This feature ensures that each serving of Kashaya is consistent in taste and potency, providing a premium experience for users.

Index Terms—Ayurvedic Kashaya, decoction, vending machines,cost-effectiveness.

I. INTRODUCTION

Internet of Things, IoT alike its name; can be referred to as the Internet of everything. It can also be regarded as an Industrial Internet.It can be defined as the latest technology that has proven its existence worldwide in terms of a network of machines or the devices that can interact with each other[1]. These devices can be easily managed and monitored through a smartphone application, providing users with greater convenience and control. Additionally, voice assistants like Amazon Alexa have revolutionized the way people interact with smart devices by enabling voice control.

Automatic vending machines are automation devices that are a need at present situation to set selling system of any product by this way. It has a wide application domain range in the public sector. It has applications specialized in food domain like snacks, Eatables, Chocolates etc [2]. This project aims to leverage the IoT and vending machine technologies to create a portable and convenient Kashaya vending machine that can be controlled by a mobile application.

The proposed vending machine for herbal decoctions (Kashaya) will provide users with the ability to brew and dispense Kashaya from selected plants on the go.The goal of this project is to create a vending machine for herbal decoctions (Kashaya) that can be controlled by a mobile application. This project's contribution aims to create a portable Kashaya machine that brews kashaya with a selected plant and delivers it. The machine's mobile application will also keep the user informed about the temperature and amount level, ensuring a consistent and high-quality experience.

In summary, this project seeks to create a Kashaya vending machine that can be used and carried anywhere, providing a portable solution for brewing and dispensing herbal decoctions. By combining IoT and vending machine technologies, this project aims to make the experience of preparing and enjoying Kashaya more convenient, accessible, and enjoyable

II. LITERATURE SURVEY

By using a PH sensor, we can know the quality of milk when determining its level. So with the help of Zigbee(ZigBee is a technological standard created for control and sensor networks based in IEEE 802.15.4. ZigBee is a specification for a suite of high level communication protocols using small, low-power digital radios based on an IEEE 802.15.4 standard for personal area networks) [9], later the milk will be passed through it, and the milk must be very high quality. In any case, if we have high quality and low quality milk, those will be divided into two different segments. But here the main failure of the system is that dividing the milk is difficult because we have to use manpower. This paper particularly like Arduino is a free and open-source prototyping tool using simple software and

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hardware. It consists of a programmable circuit board and ready-to-use software known as the Arduino IDE[3], this is used to write and upload computer code to the physical board, and relay modules (4 channel), LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 2X16 LCD display is very basic module and is very commonly used in various devices and circuits and LCD display[4] for preparing Kashaya solution in an interesting way, also adding graphite heating components and Nichrome wire, and preparing Kashaya solution without any manpower in a very short time. In this paper, the information is only focused on how well we can use technology to make use of it in our busy morning schedules. Normally we require a lot of time to make Kashaya with many ingredients to make it perfect, and yet it can be perfect or cannot because of our morning schedules (going to work, sending kids to school, etc.). So they created an interesting technology with Bluetooth (HC06) and components like an Arduino and a relay module
(4 channels). The person who is using this technology can control everything with his smartphone. The machine will be communicating via Bluetooth. This has the best service when we need the kashaya in the morning hours. This system uses graphite heating components, Bluetooth, Arduino, and a relay module to make the portable decoction (kashaya) making machine. The interesting feature of this machine is, it can identify whether the Kashaya is ready with the help of its heating mechanism. By going one step beyond with the latest technology of Bluetooth (HC06), connecting with our mobile, we make it much easier to control.

III. COMPONENTS REQUIRED

A. Arduino

Arduino is an open-source electronics platform. Arduino can take the input from many sensors attached to it can give the output to many lights, motors etc. Arduino platform provides an integrated development environment (IDE) based on the Processing project, which includes support for C, C++ and Java programming languages [6]. It is an open-source electronics platform consisting of a programmable microcontroller, software, and hardware. It was designed to provide an easy and cost-effective way for people to create interactive projects with electronics. The platform is suitable for both beginners and advanced users and can be used in a wide range of applications in fields like art, science, education, and engineering. The microcontroller is the core of the Arduino platform, and it can be programmed to perform various tasks. The software used to program the microcontroller is open-source and free to download. The Arduino platform also offers a variety of hardware components such as sensors, actuators, displays, and communication modules, which can be easily connected to the Arduino board using standardized connectors and protocols. The Arduino platform is user-friendly and intuitive, with a simple programming language that can be learned quickly. It is an ideal platform for students, hobbyists, and professionals who want to explore the world of electronics and create innovative projects.

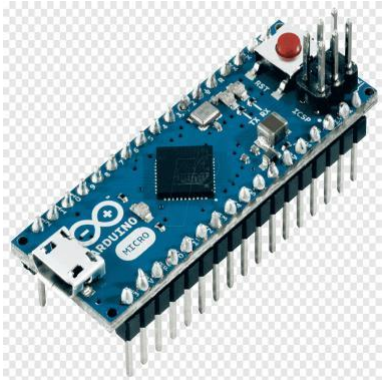

Fig. 1. ARDUINO

B. Four channel relay module

A relay is an electrically operated switch. Relays may operate mechanically called as electromagnetic relay and some are solid-state relays. Where ever it is necessary to control a device or circuit by a small-power signal, relays are implemented and they also provides electrical isolation between sensing circuit and actuating circuits, or where multiple circuits are to be controlled by one signal[7] .It is an electronic device that allows users to control multiple electrical devices using a microcontroller or other control system. It consists of four relays, which are electromechanical switches that can be activated using an external voltage signal. Each relay in the module can be used to control a different device, such as a motor, light, or valve. When a signal is sent to the relay, it switches the corresponding electrical device on or off, depending on its current state. The 4-channel relay module is commonly used in automation systems, where it can be used to control multiple devices simultaneously. It is also useful in applications where a microcontroller needs to control devices with different voltage or current requirements, as each relay can be rated for a specific voltage and current. Overall, the 4-channel relay module is a versatile and reliable device that is used in a variety of electronic applications. Its ease of use and flexibility make it a popular choice for hobbyists and professionals alike.

Fig. 2. Four channel relay module

C. Mini Water Motor

A mini water motor is a small electric motor used to power small water pumps in applications such as aquariums, fountains, and hydroponic systems. The motor is usually designed to be compact and energy-efficient, making it ideal for use in small-scale water-based systems. Mini water motors can be either AC or DC powered, with DC motors being more commonly used due to their efficiency and ease of control. They can be powered by batteries or an external power supply and can be controlled using a variety of control systems, including switches, relays, and microcontrollers. One of the key benefits of a mini water motor is its compact size, which makes it ideal for use in tight spaces. It is also very energy-efficient, consuming very little power compared to larger motors, which helps to keep operating costs low. Overall, a mini water motor is an excellent choice for anyone looking for a small and efficient motor to power their water-based system. Its compact size, energy efficiency, and ease of control make it an ideal choice for a wide range of applications.

Fig. 3. MOTOR

D. Water Pipes

Water pipes are tubes or channels that are used to transport water from one location to another. They are a critical component of water supply systems in both residential and industrial settings. Water pipes can be made of a variety of materials, including copper, PVC, steel, and cast iron, depending on the application and requirements of the system.

Water pipes can be designed for different purposes, such as transporting drinking water, wastewater, or irrigation water. They can also be classified based on their size, pressure rating, and temperature rating. The most common types of water pipes used in residential and commercial settings are PVC pipes and copper pipes.

Water pipes require regular maintenance and repair to ensure they function properly and do not leak or break. Regular in-spection and cleaning can help prevent blockages and damage to the pipes, which can lead to water damage and costly repairs.

Overall, water pipes are a crucial component of any water supply system, and their proper installation, maintenance, and repair are essential to ensure safe and reliable access to clean water.

Fig. 4. WATER PIPE

E. HC 05 Bluetooth Module

Bluetooth is a wireless data communication module that uses radio frequencies. The main function of this module is to replace the serial communication that used to be wired now to be wireless[5]. It is commonly used in applications such as wireless data transfer, remote control, and wireless communication between microcontrollers.

The HC-05 Bluetooth module is a compact and low-cost device that operates on a 3.3V power supply. It can be easily integrated into electronic projects and is compatible with a wide range of microcontrollers, including Arduino, Raspberry Pi, and other embedded systems. The module has a range of

Fig. 5. BLUETOOTH MODULE

up to 10 meters and can be configured to operate in a variety of communication modes, including slave and master mode. It supports a variety of communication protocols, including UART. A universal asynchronous receive/transmit (UART) is an integrated circuit which plays the most important role in serial communication. It handles the conversion between serial and parallel data. Serial communication reduces the distortion of a signal[8].

One of the key benefits of the HC-05 Bluetooth module is its ease of use and versatility. It can be used in a wide range

of applications, including remote control, wireless sensor networks, and wireless data transfer. It is also a cost-effective solution for adding wireless communication capabilities to electronic projects.

Overall, the HC-05 Bluetooth module is a powerful and versatile device that is an ideal choice for anyone looking to add wireless communication to their electronic projects.

F. 18650 rechargeable batteries

18650 rechargeable batteries are cylindrical-shaped lithium-ion batteries commonly used in electronic devices such as laptops, flashlights, and power banks. They are called 18650 because they measure 18mm in diameter and 65mm in length.

18650 batteries are popular due to their high energy density and long battery life. They are rechargeable and can be recharged hundreds of times, making them a cost-effective and environmentally friendly option compared to single-use batteries. These batteries are available in different capacities

Fig. 6. BATTERY

and voltages, allowing them to be used in a wide range of devices. They can be charged using a compatible battery charger or power bank, and it is important to use the correct charging equipment to prevent damage or overheating.

One of the key benefits of 18650 rechargeable batteries is their versatility, making them ideal for use in a wide range of electronic devices. They also offer high performance, long battery life, and a cost-effective, environmentally friendly alternative to single-use batteries.

Overall, 18650 rechargeable batteries are a reliable and con-venient power source for a wide range of electronic devices, and their versatility and performance make them a popular choice among consumers.

IV. CONCLUSION

The portable Kashaya making device works on an android based application and the time taken to get the Kashaya is also very less. The linking of the android application to the Kashaya making machine is done by HC05 bluetooth module. The application would alert the client when the making of Kashaya is done. In order to prevent from overheating we covered the entire with a protective layer. To safeguard the hardware from any excess current(Leakage current has the potential to be fatal and hurt people. Additionally, overload and short circuit lead to over current, which can damage wires and other electrical component. Over current and leakage current could rise in likelihood of a low voltage circuit fire)[13] the whole equipment is housed in a nook. To reach the common man the Kashaya making machine must either should be associated with a company so that by their online sales it can get popularized and boost the sales and income or it must be displayed in technological expose so that any investment is done on it by any wealthy private or government investor. It also needs to linked to the cloud database(A database can be accessed by the clients via the internet from the cloud database service provider and is deliverable to the users when they demand it. In other words, cloud database is designed for virtualized computer environment. The cloud database is implemented using cloud computing that means utilizing the software and hardware resources of the cloud computing service provider)[12] so that it can maintain the database for each and every particular person and in particular dates. And, by further development we can also get a Kashaya from anyplace just by monitoring in the application.

V. BLOCK DIAGRAM

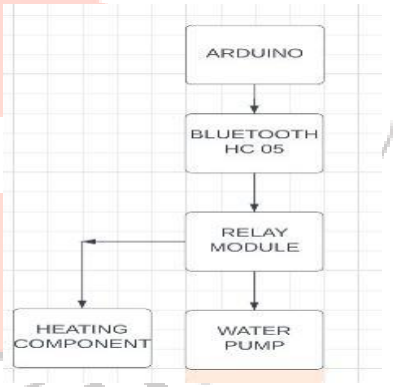

Fig. 7. BLOCK DIAGRAM

VI. RESULT

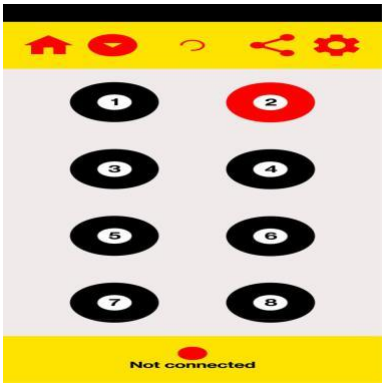

Fig. 8. RESULT 1

Fig. 9. RESULT 2

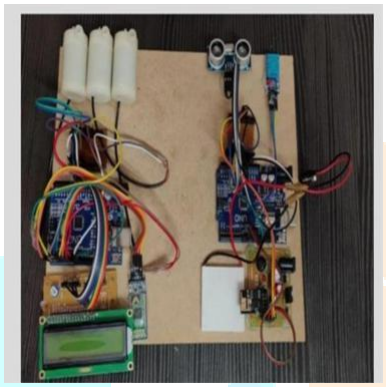

Fig. 10. RESULT 3

VII. FUTURE ENHANCEMENTS

Depending on the needs of the customer, this model may be further improved and altered into other sizes. Different-sized kashaya-making equipment will improve market demand and promote sales. Also, it can make people happier by freeing them from having to go through the laborious process of producing Kashaya. The data of every user may be obtained by connecting this to the database, which we can then connect to the Android application(Android Operating is primarily designed for touchscreen devices like mobile, tablet and smart-phone. Android OS is based on a Linux kernel and other open-source software. We know that Android is open-source, so it is becoming the fastest growing operating system for mobiles) [10]. we developed. In response to market needs, the next frameworks will have more openings and faster handling

times.The future systems include more number of slots and increased speed[11].

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