



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 13, Special Issue 2, May 2024

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

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AI Voice Command & Keypad Based Cocktail Making Machine Using Raspberry Pi

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ABSTRACT: The AI Voice Command & Keypad grounded Cocktail Making Machine using Raspberry Pi is designed for making touchless blend drinks without mortal interventions. The system utilizes a Raspberry Pi Pico along with detectors like IR, ultrasonic, flow cadence detector and Voice recognition module, pumps, motors. The main thing of this design is to set up an Automated blend Maker system that would admit an order to make a drink from the client using voice command and keypad interface. In moment's excited terrain, staying times are a significant factor. guests get irked and unhappy with the service at busy cafts, due to ineffective ordering and distribution.

KEYWORDS: AI (Artificial Intelligence), Raspberry Pi Pico, Sensors, Voice Recognition Module.

I. INTRODUCTION

Currently, automated machines are in demand for they make multitudinous conditioning not only easier but also efficiently. These machines bear minimum mortal intervention to do its job. In utmost blend bars, the busiest person is generally the bartender since he's the one who mixes and prepares drinks for guests who are eager to have a drink. Due to time pressure and demands from the costumers, bartenders are prone to making miscalculations during the factual blend making process. The automated microcontroller grounded blend mixer and dispenser minimizes the need for bartenders to feed to the requirements of the guests. likewise, offering drinks in a disorganized manner from stock, performing in profit losses, is a common problem these days. The machine is stoner-friendly and is veritably simple to operate. The guests will only have to deal with pronounced buttons that indicate the kind of blend drink to be produced. With this, labour cost will be minimized and it'll also give bar possessors the occasion to attract further guests with this invention. They're designed as for placing in clubs and bars for acceleration and delicacy of drinks repatriation, or for using at homes to get a fine drink without any need to visit bar.

II. AIM

I believe, that an automated cocktail mixer can eliminate several problems, appearing in nightclubs or just in cases of drinking alcohol. With such machine it is possible to serve more customers during a busy night. Such cocktail machine could be a showpiece, that attracts more customers, and finally, it is just convenient, as the electrical coffee machine [3]. We here develop a smart next generation cocktail maker machine that can doesn't have any buttons not a touch screen; it is simply operated by users voice command to make and serve from a menu of 20 cocktail drinks to the user.

III. PROPOSED SYSTEM

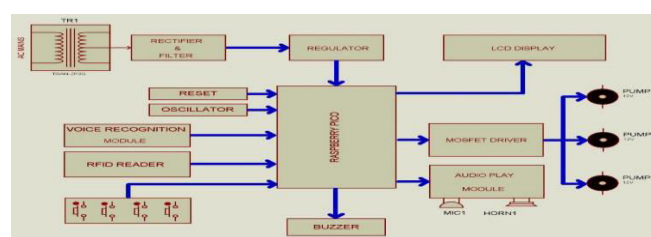


Fig.1 Block diagram of AI voice command & keypad-based cocktail making machine using Raspberry Pi.

- Circuit requires 5V and 12V regulated DC force. We used also 12V motor with remedy and sludge. Now the avoidance of capacitor is DC 12V-13.4 V according to motor conditions given to the circuit, which is demanded to convert in 5V regulated for microcontroller and other bias, also we have used LM7805 regulator for getting 5V regulated DC.
- RP2040 microcontroller chip designed by Raspberry Pi in the United Kingdom. double- core ARM Cortex- M0 processor, flexible timer running up to 133 MHz. 264kB of SRAM, and 2 MB of on- board flash storage. USB1.1 Host and Device support. 26 multifunction GPIO legs. 2 × SPI, 2 × I2C, 2 × UART, 3 × 12- bit ADC, 16 × controllable PWM channels.
- Accurate timer and timer on- chip. Voice recognition is a speaker-dependent module and supports up to 80 voice commands. Any sound could be trained as command. stoners need to train the module first before recognizing any voice command.
- Leg 2 RXD journal communication legs used to chapter with RFID. RFID has TXD leg for transmit data or commands serially. Microcontroller works with 5V DC and RFID may works with different force, our used modem works with 4.7 V, so this difference can't communicate serially. To break this problem we used position shifter IC MAX232 it shifts voltage situations and communicate between microcontroller and RFID.

IV. WORKING PRICIPLE

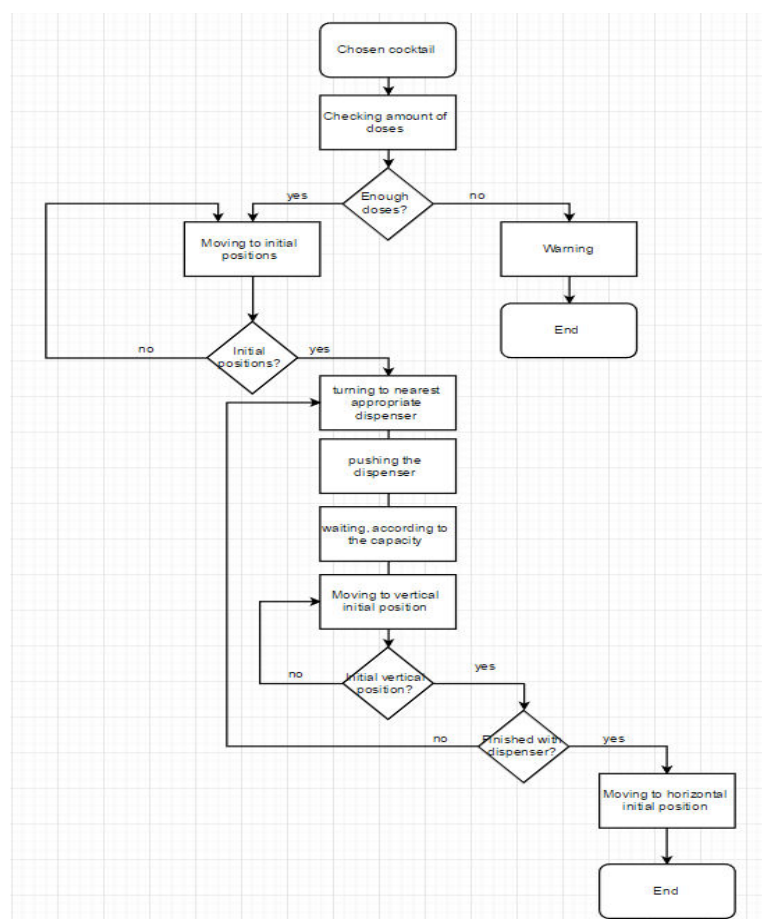


Fig.2 Flowchart of AI voice command & keypad-based cocktail making machine using Raspberry Pi [3].

Cocktail machine has to main working modes-loading mode and mixing. Loading mode is switched by the user with the help of touch screen, when there is a need to make any changes in beverage position and amount. This mode consists of three different variants of loadings [3]:

1. 'Refilling'. This mode is switched on, if there is a need to change empty flasks to the new ones. User chooses the hole of the flask to change on the touch screen, and sets the amount of spirit inside the bottle, if it is not full [3].

2. 'Thematic'. In this mode cocktails are sorted in different themes, like 'New Year', 'Beach party', and so on. User chooses the theme, that is needed, and the cocktail machine specifies, which spirits with which dispensers should be placed in a certain hole [3].

3. 'Everything we got'. According to the name, in this mode user simply adds in the cocktail machine every available drinks. After choosing the drink, machine gives a recommendation, which dispenser is suitable for this spirit. Finally, all cocktails, which are possible to mix, will be listed on a screen [3].

V. METHODOLOGY

The AI Voice Command & Keypad based Cocktail Making Machine using Raspberry Pi Pico uses various hardware components.

1. RASPBERRY PI PICO

The Raspberry Pi Pico acts as microcontroller, performing as the processing unit for the system. It's powered by a 64-bit, quad-core Broadcom BCM2711 ARMv8 processor.

2. MOTOR DRIVER CIRCUIT (L293D IC Board)

L293D is a binary H- ground motor motorist integrated circuit (IC). DC motor drives are used for controlling the speed and direction of DC motors, these drives give the necessary inflexibility and control needed for different tasks in wide range of diligence.

3. IR DETECTOR

An IR detector can be employed for hand discovery by detecting infrared radiations emitted by the mortal body. The IR detector can smell the presence of movement of hands within its range.

4. SERVO MOTOR

Servo motors are known as electronic bias and rotary or direct selector. Integrating servo motors into a blend making machine adds perfection and robotization, enabling harmonious and customizable libation medication.

5. VOICE RECOGNITION MODULE

Voice recognition module V3 is a voice recognition module that can be used in voice recognition. This module has the capability to accommodate a outside of 80 voice commands with a outside of 7 voice commands that can be used at the same time.

VI. RESULT & DISCUSSION

1. Implementation of the Project

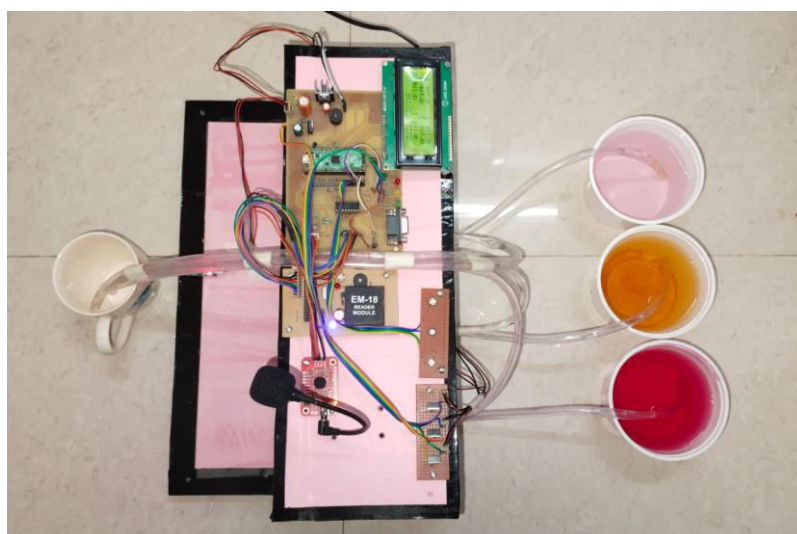


Fig. 3 Implementation of Project

2. Drink Recipes stored in system

Sr. No.	Drinks	No. of Drinks	Price
1	Red Drink	1	40/-
2	Yellow Drink	1	40/-
3	Water	1	40/-
4	Red + Yellow Drink	2	60/-
5	Yellow Drink + Water	2	60/-
6	Red Drink + water	2	60/-

Table.1 Drink recipes stored in system

3. Outcomes of Drinks that stored in system

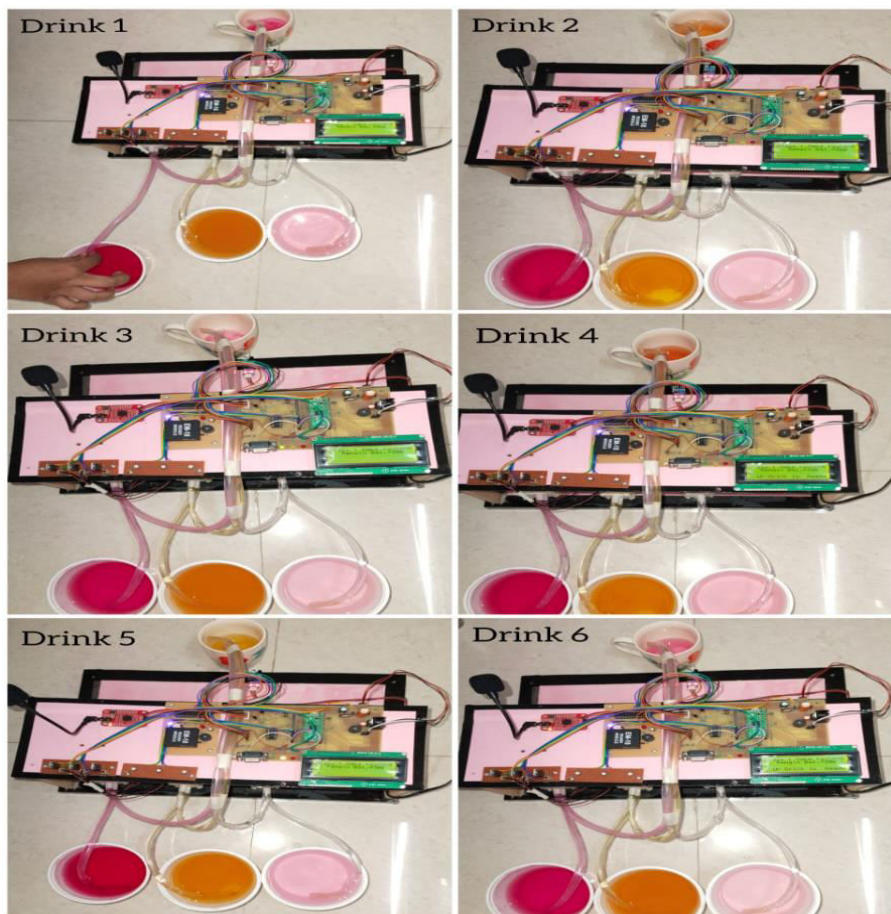


Fig., 4 Outcomes of Drinks that stored in system

4. User interaction with voice and RFID cards.

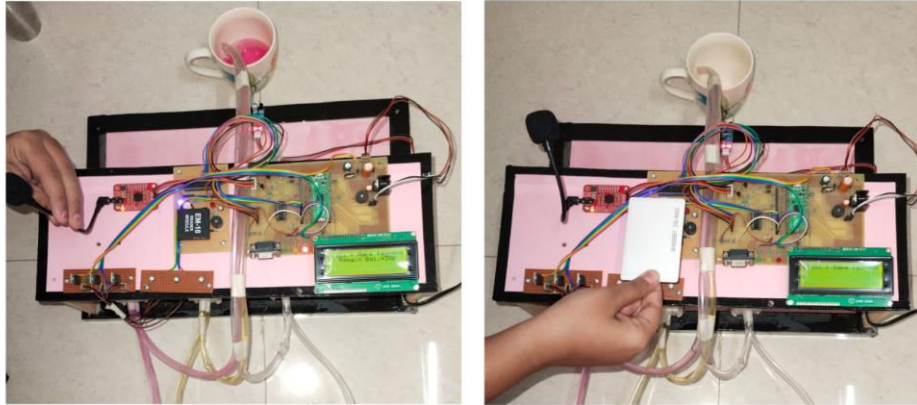


Fig.,5 User interaction with voice and RFID cards.

VI. CONCLUSION

In conclusion, creating an AI voice-controlled cocktail-making machine using a Raspberry Pi is a fascinating project that combines the worlds of technology and mixology. This project allows you to leverage the power of AI and Raspberry Pi to automate the process of crafting cocktails, making it a fun and innovative addition to your home or bar.

Through this project, you can explore various aspects of AI, machine learning, and IoT (Internet of Things) while also enhancing your knowledge of hardware and software integration. It provides a hands-on experience in building a practical and entertaining application for everyday use.

However, it's important to note that such a project may require a solid understanding of programming, electronics, and potentially even some mechanical engineering, depending on the complexity of the machine. Safety precautions must also be taken into account when dealing with alcoholic beverages and machinery. Additionally, it's crucial to comply with legal regulations regarding alcohol production and distribution.

ACKNOWLEDGEMENT

First and foremost, we express our gratitude to the Electronics and Telecommunication Engineering Department Head for granting us the opportunity to work on the proposed system.

A sincere thank you goes to our guide for valuable advice and insightful recommendations, essential for undertaking this task, without which this suggested task would not have been pursued.

We appreciate our dedicated guide for encouragement, swift assistance, and guidance, enabling us to complete the assignment within the given timeframe.

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