IOT Based Smarty-Chef-Automated Electro-Mechanical Chef

Prof. Dipali Shende[1] More Sainath[2] Deshmukh Kushna[3] Raut Sagar[4]

Professor, Department of Electronics and Telecommunications, Sinhgad Institute of Technology, Lonavala, India[1].

Student, Department of Electronics and Telecommunications, Sinhgad Institute of Technology, Lonavala, India234.
Sinhgad Institute of Technology, Lonavala, Pune, India
dshende.sit@sinhgad.edu1, sainathmore192@gmail.com ,Sagarrautr@gmail.com
deshmukhkrushna2@gmail.com

Abstract : Today our lives are hurried and busy. We want to experience more and achieve more. This pursuit of fitting more into each day leaves little time for the most important factor which affects our quality of life- the food we eat. Many great innovations have come which help us to monitor our health, sleep, steps, pulse to live better. But the problem of eating fresh & healthy without any hassle is yet to be addressed. Unfortunately, mornings are hectic for most people, especially families with children.

In the current day situation it is very difficult to cope up with hunger pangs. Most people usually rush through the meal, gobble down whatever's handy in the kitchen, or grab a quick, on-the-go bite. That's where the Automated food Maker comes to the rescue. It's all about making a fresh food that one can grab and go. All it needs is to add the necessary ingredients and then selecting the preset menu of various dishes.

1.INTRODUCTION

Food automation the one among the fast growing technology, today's food making machines are most popular and most of need. The Automated food maker machine is a pioneering concept in food manufacturing since it is designed to cook more than one kind of dishes. In the modern day situation, food maker is the eye catcher of the people who are not able to cook for themselves manually. Automation in food manufacturing has been a primary solution in improving the consistency, safety and accessibility of food in major consumer marketsThis was mainly made by considering present busy life style of the people. Food maker reduces the man power and time to certain extent. The Automated food maker is designed to deliver a whole new set of functionalities that will create a benchmark in the automated food making sector

Objectives

- In this 21st century, women not only have to serve the home but also the corporation where she is working.

- Even just being only a home maker and managing the complete home is difficult for women. Of all the tasks in the home, cooking requires more time .
- It does not use any gas so any hazard can be avoided.

- Quality of food is not compromised.An advanced cooking system would probably reduce lthe burden
- This machine can be used either on a small scale or even on large scale purpose
- Reduction in wastage of food

Mechanical Parts and its working:

- Bowls: We will put raw food ingredients in this.
- Liquid Containers: For dispensing of water and oil in food preparation.
- Main shaft: It will move the bowl carrying raw food ingredients and dispense it into the cooking pot.
- Motor : It gives water and oil for food preparation into the cooking pot.
- Induction cooker: It is used to provide different heat temperatures to the cooking pot for food preparation.
- Stirrer: It rotates the food ingredients present in the cooking pot so that the food do not get burned.
- Spice dispenser: It will dispense required amount of spices and required spices into cooking pot.
- Cooking Pot: It collects the spices, raw food ingredients, oil and water and prepares the food inside.

Electrical Parts and its working: -

- Wi-Fi module It is used for communicating with the
- machine. AT328 Arduino uno   It supervises all the process of the machine and every instruction is loaded in it.
- Power Supply: It gives power to every electrical equipment present in the machine.
- Servo motor: It is used to move vegetables bowls and also in spice dispenser.
- Induction : For providing heat to cooking pot.
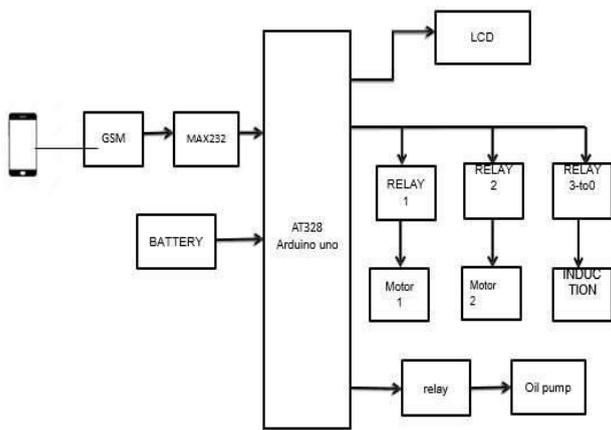- Relay: For operation various switches automatically

Fig-Block diagram

Methodology

For the Automated food maker to start it's working the user has to switch on the power supply and open the "SMARTY CHEF" app. The app display, then presents the user with various dishes that he/she likes to cook. Once the user selects the dish, the app again asks the user for number of serves or the amount of food to be cooked. The user needs to confirm the number of serves. This action switches on induction stove, relay circuit and microcontroller.

The microcontroller reads this input and chooses all parameters to cook the set dish microcontroller initializes all the data according to the user's input and starts executing programmed functions, hardware parts of the system are initialized and they start working according to the program.

The microcontroller program initializeinduction stove and sets the time and temperature accordingly. It then activates all containers containing ingredients to get the ingredients into the container by using the relay drive circuit.In the meanwhile, the stirrer assembly is also activated and it maintains the correct mixing of the ingredients. Finally the dish is cooked for the preset time and after the preset time is elapsed.

the microcontroller switches off the entire system so that the container containing the cooked dish can be taken out and the dish be served. strategic locations. Such information's should be in real time and transmitted wirelessly from the measured location.
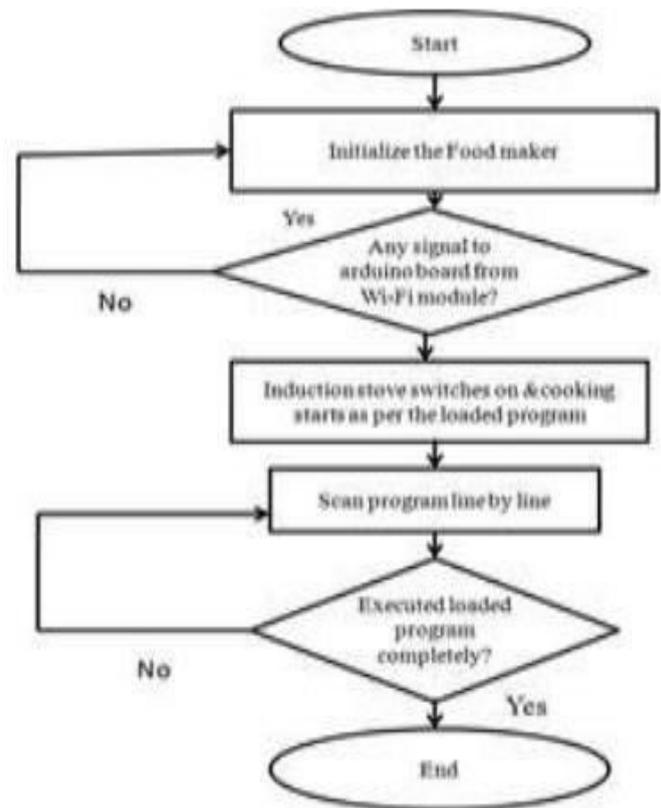
SOFTWARE IMPLEMENTATION

Arduino Software

The program for the microcontroller is written in embedded C language using Arduino IDEThe Arduino integrateddevelopment environment(IDE) is across-platform application (for Windows, macOS,Linux) that is written in the programminglanguage Java.It is used to write and upload programs to Arduino compatible boards.
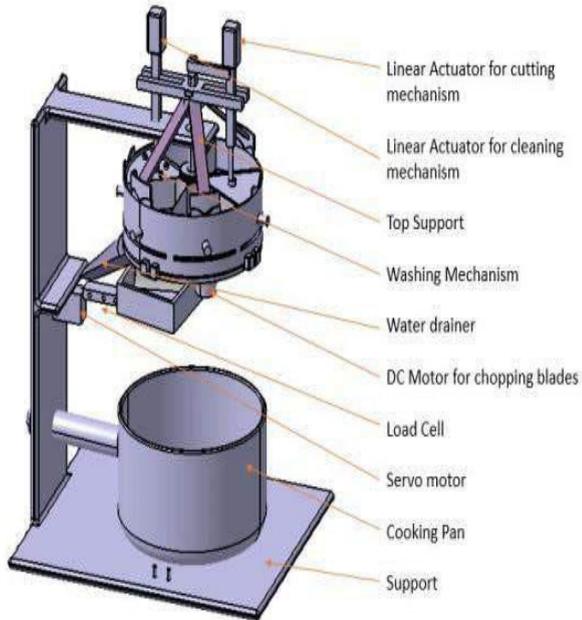
Android studio

In order to select the dish and to enter the number of serves, an android applic ation called as "SMARTY CHEF" is developed using android studio. To code the app java language is used. To develop android application for android devices, android studio is the official integrated development environment from Google. To create an app Arduino studio consists of all the API. On Windows, macOS and Linux based operating systems Android studio is available for download.

Flow chart

Linear Actuator for cutting mechanism

Linear Actuator for cleaning mechanism

Top Support

Washing Mechanism

Water drainer

DC Motor for chopping blades

Load Cell

Servo motor

Cooking Pan

Support

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Result

- An Automated food maker for was fabricated successfully. The complete machine process control was done using microcontroller with embedded language as it is easier for individual to understand and operate.

- The necessary heater control and actuator control are done through power supply and relay board circuit. Few trails were conducted on the developed equipment to prepare Upma for 2 serves (that is for two people) during the trails we observed that proper amount of ingredients are been put into the vessel and is linked to selection of serves done by the operator.

- The trails show that apart from main ingredients, Water, Oil and other ingredients which are used are made to flow to meet the requirement. This is handled in the program part and it is functioning smoothly.

Conclusion

- This project mainly concentrates on concept
- development and trials to ensure electronic control parts operation.
- Hence the design is considered mainly for easy prototyping, keeping this the containers and other parts such as motors, vessel and induction stove are directly brought and integrated into the system to conclude the prototyping build provides all operation and functionality of the Automated food maker. However the design part can be reviewed to make more aesthetic and raged to fit into kitchen environment.