Chapter 75
Smart Refrigerator with Recipe Assistance

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ABSTRACT

Internet of Things (IoT) will lead to a technological revolution that will change the way people live and interact with their surroundings. Intelligent appliances combined with multimedia capability have been emerging in everyone's life. Smart home is one of the prominent areas of intelligent advances. Kitchen is considered as the center of our house, where the refrigerator plays an important role. Smart Refrigerator with Recipe Assistance will help in automating the refrigerator. The authors propose a system that would track the stock of ingredients in the refrigerator with the help of RFID tags and load cells. According to the availability of ingredients a list of possible recipes is predicted and suggestions will be given to the user. Whenever an item is identified by a RFID tag, estimations on the usage of ingredients are made and we can get notifications about the scarce products. The system will also help in checking the availability of ingredients based on the recipe user wishes to cook. The time required by an individual for manually checking the availability of ingredients in the refrigerator and then thinking about what to cook is greatly reduced using this system. Most of the information is automatically generated using RFID tags. Once the user logins into the application he/ she will be suggested the possible list of recipes based on the availability. Human intellectual power then can be used for new creative processes rather than using it for routine chores.

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INTRODUCTION

With the fast pace life, it becomes tedious to manage the office work as well as the household chores. There is a coax for automating each and every component used in daily life. Using the human intellectual power for new creative processes is better than using it for routine chores. As stated on Wikipedia, "The Internet of things (IoT) is the internetworking of physical devices and other items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data." Internet of Things can also be stated as an ecosystem of connected physical objects that are accessible through the internet. The 'thing' in IoT could be a person with a heart monitor or an automobile with built-in-sensors, i.e. objects that have been assigned an IP address and have the ability to collect and transfer data over a network without manual assistance or intervention. The embedded technology in the objects helps them to interact with internal states or the external environment, which in turn affects the decisions taken (HappiestMinds, 2017). With the help of IoT our home will be automated in no matter of time. Designing of applications for the betterment of humans and also of the society is the main aim of some user-friendly applications. This will be a boon in the development of the society. Generally, the IoT technology attracts several researchers (Schaller, & Mueller, 2009; Bhatt, 2017; Borawake-Satao, & Prasad, 2017; Saikar et al., 2017).

"Smart Refrigerator with Recipe Assistance" is a system proposed to help in automating the refrigerator. RFID tags are the unique identifiers attached to every ingredient kept inside a refrigerator. Having all the information generated using these RFID tags will help to reduce the time consumption, where the user had to check the items manually otherwise. The quantity of the respective items will be checked with the help of load cells. From the ingredients available, the recipes can be suggested with the help of sensors integrated in the refrigerator. Once the user logins into the application he will be suggested the possible recipes based on availability of ingredients. Combinations of all the ingredients are considered for suggesting the recipes. This system also helps in checking the availability of ingredients based on the recipe entered by the user.

The users communicate with the system through the android application. The system can be helpful for all age groups. Chefs, homemakers, working women as well as men can have the opportunity to use this system in a very efficient manner. People won't have to scratch their heads for new dishes every day. They can follow the schedule by preparing the recipes suggested by the refrigerator one by one. The users now can stop opening the refrigerator doors every now and then. The availability can be checked even when not in the kitchen. People can easily relax in their extra time not thinking about the food to prepare. At the proper time, the list will be available at hand, the user will just have to select one recipe and start the procedure.

LITERATURE SURVEY

Intelligent appliances have been emerging in our daily life. The concept of smart refrigerator has been introduced by many developers, designers and manufacturers. Smart grocery management system helps in identifying the quantity of ingredients and sending the notification based on the available quantity.

"Smart Grocery Management system using Internet of Things" stated by Patil and Pawar describes the existing systems involving the use of HC-SR04 ultrasonic and temperature sensors. The smart grocery management system helps in automated grocery management with the help of messaging protocol,