

# Software For Intelligent Automatic Washing Machine

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**Abstract** - The aim of the project is to build a software that can be embedded in the washing machine. The software is made with the purpose that it can learn from its experience making it an intelligent machine which can analyze the patterns followed by the user during washes and then could replicate the same patterns from its experience. Also the system supports manual functioning and semi-auto Functioning as well. Through this paper, theoretical explanation of a working of the machine is given with the help of which the automation of washing machine is made more easier. This system works on the RFID which is a rising technology based on the fusion of electronics and computer science. The concept of RFID helps to access data from the databases in which it has been stored during the registration.

**Key Words:** RFID, automation, sensors

## 1. INTRODUCTION

In this era of modernization, technologies are advancing rapidly. Every day we see some new technology coming in market to simplify our lives more than ever. The software is developed to make the washing machine intelligent so that it can analyze the data given by its receptors which are present in form of sensors and could take appropriate actions through its effectors. This analyzation of data takes place with the help numerous sensors which are present in the washing machine. The account for the success of RFID based washing machine is its efficiency and makes it a feasible technology at low cost.

The main basis of the software is machine learning and java so that the system could learn from its experience and recognize the patterns of its user. Traditional methods of using washing machine involved manual work in which people used feed information every time they operated on the washing machine. It is really a very tiring job to feed the data every time. But now the washing machine figures out for itself from the previous entries of user what type of operation the user wants to perform. This will reduce the human work to great extent and make the washing machine self learning. A database is used to collect the data, analyse it and perform comparisons with previous data to provide the output which was required by the user.[4]

The fully automated washing machine involves use of sensors and RFID system which takes the entries from

different users and stores the entries in a database. When the user comes next time he/she now have to select their previous entries and not feed the information again and again.[9] The washing machine makes comparisons automatically using previously stored data in database. This paper involves description of the fully automated washing machine that stores the input with the help of an RFID system and a database in which the user has to register once in the starting.[7]

### 1.1 RFID

RFID stands for Radio Frequency Identification. RFID uses electromagnetic field to automatically identify and track tags attached to the objects. RFID can also be used to detect a particular person by the RFID card and RFID card reader.

RFID tags contains electronically stored information. These tags are basically of two types:-

1.1.1 Active tags

1.1.2 Passive tags

In today's modern word RFID tags are mostly used everywhere, from small projects to biometric project.

In this project- fully automated washing machine we are using RFID to feed the information of users from database, access the information of users from database, recognition of the user, etc. [1]

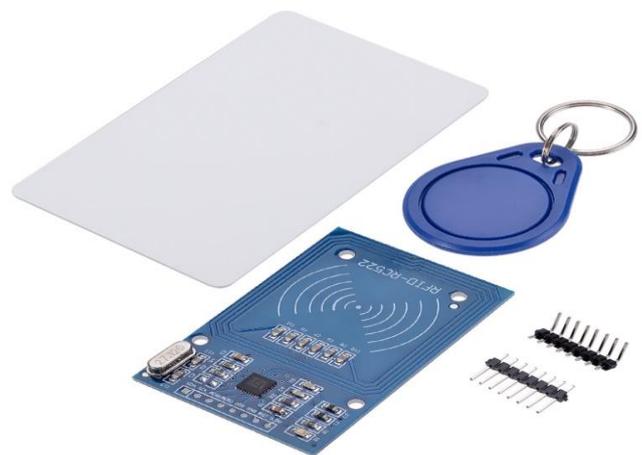


Fig-1: RFID System(card, reader)

## 1.2 SENSORS

### 1.1.1. Temperature Sensor

The temperature of water plays the most important role during washing of clothes in washing machine. If the temperature is too high or too low the clothes might deteriorate or might not get cleaned properly. The temperature sensor is therefore placed in the washing machine to watch out for the temperature of water. [5]



Fig-2: Temperature sensor

### 1.1.2. Water Level Sensor

Water level sensors are used to detect and monitor the level of water in the washing machine. The water level sensor is an important component as the level of water in the washing machine decides if the clothes will properly get rinsed or not. Proper rinsed clothes gets well cleaned and in lesser time. This sensor is usually preferred due its low cost. It also tells the maximum amount of water that can be filled in washing machine. [5]

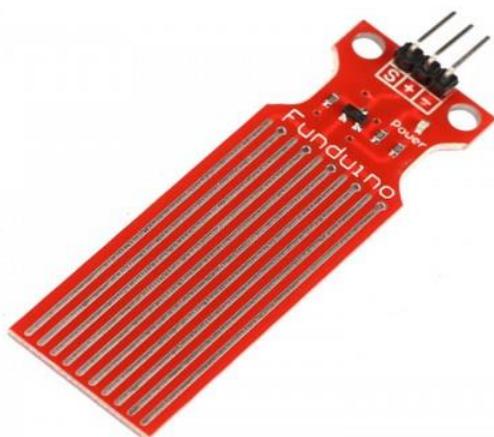


Fig-3: Water level sensor

### 1.1.3. Leak Detector Sensor

Automatic Washing Machine Water Shutoff Valves with Leak Sensor are used in residential applications to protect

against catastrophic water damage from a burst inlet hose connected to a washing machine in use or unattended. The signal is transmitted whether the washing machine is on or off, and then opens or closes the hot and cold inlet valves as needed to allow or prevent water from flowing to the washer. If it detects a leak, current flow to both the hot and cold water valves are immediately interrupted and closed. [5]



Fig-4: Leak Detector sensor

## 2. WORKING OF WASHING MACHINE

The basis of the software is written using java and machine learning so that the system could learn from its experience and recognize the patterns of its user who use the washing machine to wash their clothes regularly. Washing machine figures out for itself from the previous entries of user, what type of operation the user wants to perform. This will reduce the human work to great extent and make the washing machine self learning.[2][3]

A fully automated washing machine is being made which will be able to analyze the patterns of the people which regularly wash their clothes in a particular manner. It will reduce the work to a great extent reducing the human efforts. It will store the data of users in the database once the user is registered in database and from that database entries will automatically be picked up by washing machine once the RFID card is used. Also the use of different sensors in the washing machine makes it more advanced. These sensors will store the values every time a new user uses the washing machine and stores their values in the database.

A database is used to collect the data, analyse it and perform comparisons with previous data to provide the output which was required by the user. User has to first register themselves in the database using RFID cards provided so as to keep track of the operations performed by them. Once registered user can use the washing machine and can feed their entries in washing machine which will be in direct contact of the database. Once the entries are done user can use the washing machine a no. of times.[6]

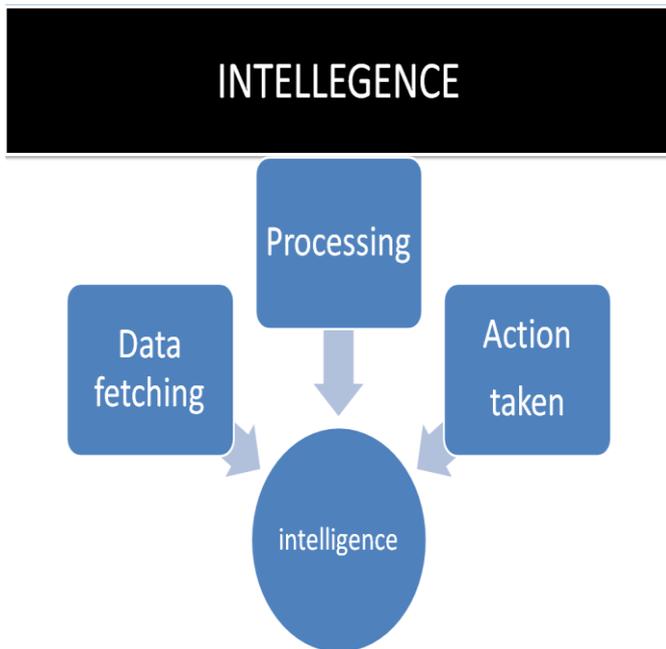


Fig-5: Learning layout of the system

### 3. RESULT

The intelligent automatic washing machine can be used in either public washing machine centre or at home also.

It saves a lot of time and human effort. It reduced the human work to a great extent. The database used can be maintained for a long time and the washing machine will get smarter by the time. The use of different sensors even make the washing machine more advanced.

### 4. CONCLUSIONS

This Intelligent automatic washing machine is a great step towards a comfortable, smart and healthy future. With the help of this device not only the high class people but even the common people can use this washing machine in a safer way. This intelligent washing machine, once installed is capable of storing data of large no. of people. The most highlighting feature of this device is that the it makes the work of people easy and also save a huge amount of time. For people who do laundry work it is a boon. People don't have to give the input every time. The washing machine itself is very eco-friendly and does not harm the environment in any way. Moreover, it is based on one of the modern technology and also not very expensive as compared to other washing machines with less advanced technologies embedded in them so far and can be installed anywhere and can be used at all times.

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