

# Intelligent Washing Machine to Detect User Material in Pockets

S. Ravichandran\*

## ABSTRACT

This paper describes an intelligent washing machine. In the present times, materials are smaller, portable and pocket friendly. At times in a hurry, the user puts their dress into washing without removing the materials or devices from the pockets. To save the material, the present invention discusses on an intelligent washing machine that uses a scanning system that allows the user to identify the presence of the materials in the preliminary stage to avoid loss of important material.

**Keywords:** Washing Machine, Internet of Things, Portable, Pocket Friendly, Material Loss, Pockets, GSM, 3D Image, Alarm

## 1. INTRODUCTION

The present invention relates to the field of Internet of things (IOT) in Washing Machines.

The goal of this research is to develop a smart washing machine that identifies materials from pockets in clothes. The recent advancements in the area of IoT has provided solutions for the laundry industry.

Our research team has developed a smart washing machine that challenges the current system and provides the following advantages:

1. A scanning module that is present inside along the walls of the machine. A Memory in the washing machine to pre-feed the images of such material
2. A GSM module coupled to the controller to intimate the user about the identification of such material already predefined in said memory or any new material apart from the predefined images. A display screen attached on the said controller to view the 3D image of the identified image
3. An alarm raising module that gets activated by the signal generated from said scanning module
4. The controller activates the GSM module and the alarm module based on the signal received from the said scanning module and stops the washing process until the user gives the overriding signal to the controller.

The implementation and description of the intelligent washing machine would be discussed in the preceding sections of this paper

## 2. DESCRIPTION

The paper discusses in detail on a smart washing machine. In the present world the user is heavily dependent upon gadgets and has been trying to designate them as smart gadgets in the sense they have their own brain. The present invention describes a smart washing machine that is capable of identifying the user material left inside the pockets. This allows the user to recover the material in case they have inadvertently left the material inside the pockets.

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\* Research Scholar, Vice Chancellor, St. Peter's Institute of Higher Education and Research, Avadi, Chennai, India. Email: [drravis@gmail.com](mailto:drravis@gmail.com)

In general case the user tends to forget completely in case they left any important material such as some official document, monetary notes, coins, portable electronic gadgets. In such cases the users realise that it has been to recover the material(s).

In such scenario the present invention yields to provide a solution by devising an apparatus/system that can be placed inside the washing machine thus converting it into a smart washing machine. At present, almost all the washing machines are automatic in the sense it doesn't require human intervention during the washing process. Thus the user dumps their clothes and starts the machine without realising that they might have left something important inside their pockets.

The apparatus devised in the present invention consists of a system to scan the clothes after the machine is started. The washing machine is shown in fig.1. The scanning module 101, 102 is present on all the four sides (only two sides are shown) in case where the machine is top loaded and on the three sides (not shown in the figure) in case if it is front loaded. In the latter case, the scanning module is present on both sides and the backside, within the washing machine. The scanning module is present inside along the walls of the washing machine such that the functioning of the system is not affected by the presence of water and clothes inside the machine

The scanning module produces a three-dimensional (3-D) image of the material found inside the pockets of the user. Further, the machine comprises of a training phase, where the device is customized according to the user. This training phase can be used by the use at any point of time to raise an alarm in case their material is found.

During the training phase, the user inputs few images of the things important for him such as the images of the monetary notes, coins, PAN card, driving license, cheque, bank passbook, portable electronic devices and other documents into the memory of the machine. The control panel 104 present on the washing machine allows the user to input the images into the memory of the machine. This allows the machine to recognize the presence of such material in the next wash (if found) and send the detected signal to the controller to stop the machine and intimate the user regarding the same through messaging services along with an alarm system.

In the present world, all the machines are automatic in the sense they do not need human intervention while washing clothes. We have a tendency to put all the clothes inside the machine and switch on the tap. The water starts filling inside the machine before the process of washing. It is this period during which the scanning takes place and the user is intimated about the presence of any material present inside their pockets.

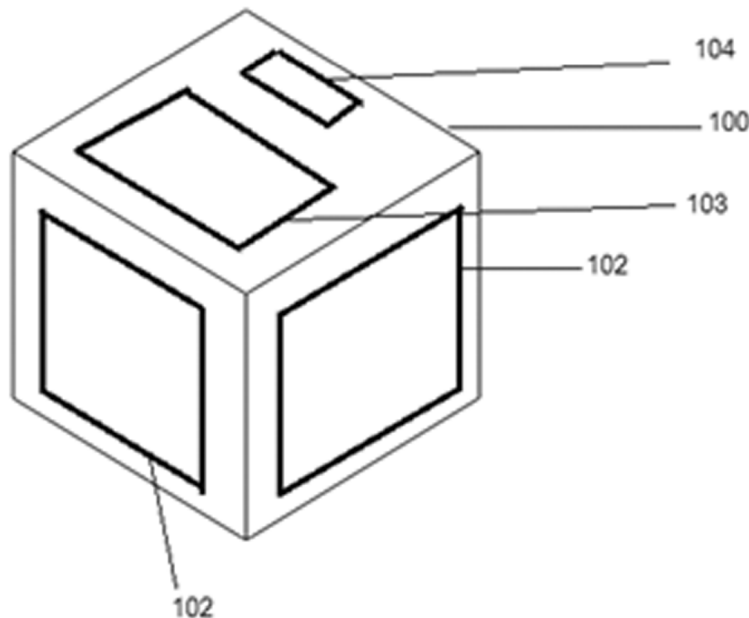
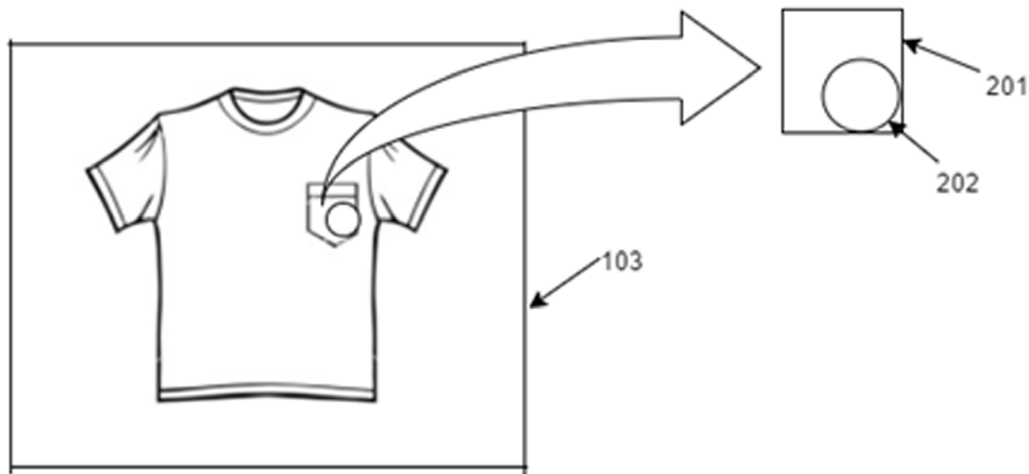


Figure 1: Smart Washing Machine



**Figure 2: Display Panel attached to the Control Panel**

Referring to the Fig. 2 which shows the display panel 103 attached to the control panel which displays the materials 202 found inside the user pocket 201 of the clothes. The above said scanning module is controlled through the control panel. The control panel acts as the main controller that is connected with the scanning module, display screen, alarm raising module and the GSM module.

The identification of the material takes place by comparing the material found with the images of the material stored inside the memory of the machine. As soon as the machine identifies the presence of any such material, the machine controller stops the process of washing and raise the signal to intimation and alarm to the user. The display screen present on the washing machine displays 3D view of the material found inside the pockets of the user. The controller prevents the start of the washing process until the user give the override signal to the controller.

The GSM module present in the washing machine that is connected with the controller, with the said GSM module is triggered by the controller when a material is found inside the pockets of the user. The user is informed regarding the same through short messaging services (SMS) by the said GSM module.

If the material found inside the pockets of the user is identified as new which means it was not predefined inside the memory of the machine, the machine has the ability to raise an alarm to intimate the user. This alarm is different from the one raised by the machine when a material found matches with the image present in the memory of the machine. In this way, the user is notified regarding the presence of a new material inside their pockets. The machine further allows the user to save/feed the image of the new material found into the memory of the washing machine.

### **3. IMPLEMENTATION**

The present invention and its advantages can be implemented as described below. A smart washing machine (any machine that is used for washing the clothes) that alerts the user in case any material is found inside the pockets of the clothes which has been accidentally placed inside the washing machine without thoroughly checked before loading into the machine. This may finally ends up in damaging the material or may damages the drum/basket or some parts of the washing machine depends upon the type of material. Thus the present invention provides a solution to such a situation.

In the current scenario, the gadgets are becoming smart and humans are relying upon these gadgets for every other need. We have a tendency to put the clothes for washing without checking the pockets. Due to such an act, there are chances that there may some important documents, monetary notes, portable electronic gadgets may easily get ruined and also ruin the life of the washing machine

In one aspect the present invention describes a method of identifying user materials left inside the pockets inadvertently inside the washing machine. The system present in the washing machine making the machine a smart

washing machine which is capable of stopping the washing process and intimates the user regarding the same issue. Additionally, the intimation can also include an alarm to notify the use in case anything is found in the pockets of dress materials left inside the washing machine.

In another aspect, the smart washing is capable of locating the material present inside the pockets of the dress material by displaying the material on the screen and the user is notified through an alarm system and message to the user mobile phone. This allows the user to pay a little heed while putting the clothes inside as there can be some important material present inside the pockets.

Further, the machine has a training phase where the user can customize the machine with inputting various images to make sure they never lose any material.

#### **4. APPLICATIONS**

The invention as described in the drawing finds applications in laundry shops, dry cleaning shops and in commercial & domestic washing machines

#### **5. CONCLUSION**

The present invention provides a smart washing machine that alarms the user in case any material is found along with the clothes inside the washing machine. Additionally, the user can also customize the smart washing machine with the images of materials that are identified before washing.

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