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Colour Discharge Alarming System in Washing Machine Using Internet of Things

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ABSTRACT

This paper relates to a smart method for identifying the colour discharge of clothes in a washing machine. Cloth colour discharging has become a major issue in the industry of laundry. Further, laundry services have become very common now-a-days. But, the colour discharge identification is still remains a major hurdle. The present invention uses a colour detector sensor that identifies the RGB composition and the light intensity of the identified colour and informs the user. Due to this action, the remaining clothes can be taken out before they are rendered useless.

Keywords: Alarming System, Internet of Things, Washing Machine, Laundry, Cloth Colour Discharge, RGB

1. INTRODUCTION

The present invention relates to the field of Internet of things (IOT) in Colour Discharge Alarming System used in Washing Machine.

Intelligent washing machines and smart technologies embedded in washing machines are recent developments in this field. However, a system to identify the colour discharging clothes from others is still a problem faced by the laundry industry and also individuals using the washing machine in their homes.

To overcome this problem, our research team has developed a smart washing machine with an alarming system that recognizes the colour discharging clothes using color intensity and sensors. The information is sent to mobile and the user can identify the colour discharging clothes prior to washing.

The invention has the following advantages:

1. A smart colour detector sensor to sense the colour and indicate the RGB composition with light intensity from colour discharging clothes
2. Data processing module comprising Microprocessor that is programmed and loaded with all possible RGB combinations, buzzer that is used to inform the user regarding the identification of the colour discharge and a GSM module that is additionally used to inform the user regarding the colour discharge

2. DESCRIPTION

The colour discharge from the clothes during the washing of clothes in washing machine colour is a major issue. In laundry services, the colour discharge from the clothes has led to a serious issue as many clothes are damaged due to such an action. People in general, after purchasing clothes do not have any idea regarding the discharge of colour from the dress when washed. In such a situation, the user inadvertently loads this dress along with other clothes into the washing machine.

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Due to such an action, the colour discharges from the dress may stain other clothes and makes those clothes useless for wearing. If the user somehow observes the discharge of colour in the initial stages, the user can prevent few clothes from being stained. But since we are not aware of such clothes, we pay attention to such an activity after few minutes which leads to staining of clothes and ultimately rendering all clothes non reusable.

The present invention discloses a method and a system to alarm and inform the user regarding the colour discharge from the cloth(es), thus preventing the staining of the clothes in the early stages. The present invention finds application in laundry services, washing machines, dry cleaning services.

Every household now-a-days has a washing machine which is predominantly automatic. The user has to load clothes inside the machine and switch on the machine. The machine intakes the required amount of water and the detergent to wash the loaded clothes. In the above scenario the user after switching on the machine leaves the area and takes out the clothes after the washing is finished. In the meanwhile, due to the presence of any clothes that sheds colour, the other clothes may get damaged.

The present invention introduces a method which is a device that has been added to the existing washing machine to alarm the user regarding the discharge of colour from the clothes. The main element of the device is a colour detector sensor. This element is already available as a product named SEN-11195. This element has the feature of displaying the identified colour in the RGB format in the form of 8-bit information. Further, the element has the capability to output the light intensity between the range 0 - 3235 lux. This rugged element can be connected to the computing device using RS-232 serial communicator.

Fig. 1 shows the device positioned at the bottom of the washing machine. The device comprises of two separate modules; one is the colour detector sensor 102 and the other is the data processing module 103. As mentioned above, the user has to load the clothes and start the machine. As soon as the machine starts, the machine inputs the required quantity of water and the detergent and the clothes starts tumbling inside the machine. In such a situation, the quantity of water present inside the washing drum is less. due to this, the colour which is shed by the clothes tends to settle down at the bottom of the washing machine. Thus, it becomes relatively easier to detect the presence of colour.

The washing drum present inside the machine is required to be made of transparent material for the colour detector sensor to identify the exact colour. The colour sensing device is arranged at the bottom of the washing drum of the machine, thus allowing the detection of the machine. The colour sensing device is

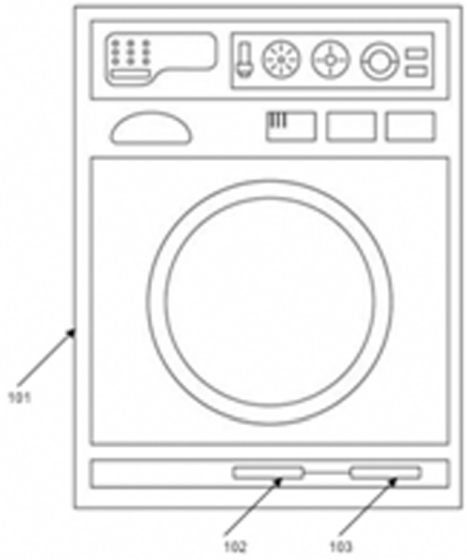

Figure 1: Device Positioned at the bottom of Washing Machine

connected a microcontroller through RS-232 serial communicator. The microcontroller is interfaced with a buzzer and a GSM module. The latter mentioned setup is shown in fig.1 with reference numerical 103.

The microcontroller further has been programmed with all the possible RGB combinations. The colour which is being discharged by the cloth(es) as mentioned above settles down at the machine. The washing drum as mentioned in the present invention; the structure is shown in fig. 2. The washing drum 201 has a mesh layer 202 at a height of 10 cm or more from the bottom of the washing drum. The clothes will be loaded inside the washing machine on this mesh layer. The mesh layer can be made of metal, alloy, plastic, or the like. The mesh layer 202 has numerous circular pores present on it with each pore having a minimum pore size of 1.5 cm.

The clothes are loaded on this mesh layer inside the washing drum. The colour detector sensor is placed beneath the washing drum. When the machine is switched on, the water starts to flow inside the washing drum and the clothes present inside starts tumbling. At this point of time, the clothes with the present quantity of water inside the washing drum 201, some clothes will discharge colour as they get wet. This colour is collected beneath the mesh in the collecting area 203. Due to this, the colour detector sensor senses the coloured water and raises an alarm through the buzzer. The microcontroller as mentioned above is interfaced with a GSM module. The user is informed through short message service (SMS) on his mobile device. The message sent to the user comprises of the name of the colour, RGB composition and the light intensity of the identified colour.

The present invention is described considering the commercial automatic washing machine, but the scope of the present invention can be extended into the application areas mentioned in the present invention as known by the people skilled in the art. The system presented in the present invention can be used in both top and front loaded washing machines. Further, the use of term or the like indicates the use of similar material that is able to withstand the load of the clothes loaded into the washing machine.

3. IMPLEMENTATION

The present invention discloses a method to identify the colour discharge from the clothes during the washing process. Due to the use of automatic washing machines, the user presence is not required during the washing process and it is likely that few clothes tend to discharge colour which leads to the damage of the rest of the clothes.

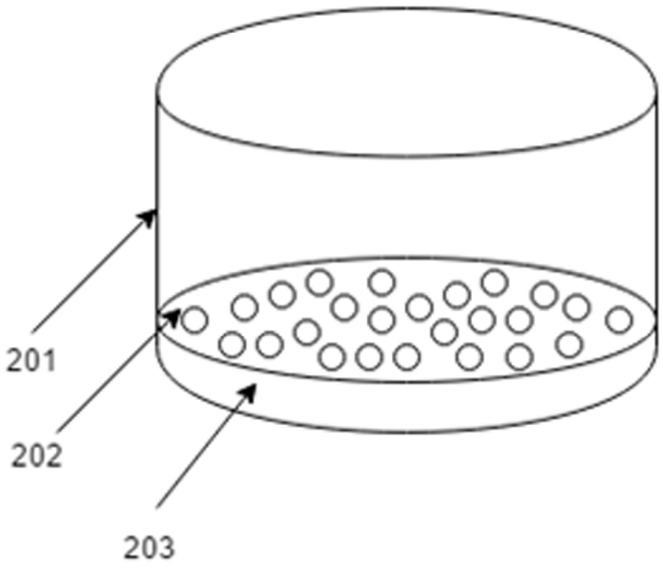

Figure 2: Structure of the Washing Drum

The system disclosed in the present invention provides a method to tackle such a situation, at the end of which it helps the user in saving many of their expensive dresses.

The discharged colour from the other colour sources such as soap, dirt and other stains inside the washing drum using colour detection sensor placed beneath the washing drum of the washing machine. A data processing module is connected to the sensor to receive the signal, compare and alert the user once it identifies the colour discharge. The processing module stops the machine until the user gives the override control to the processing module. The user is further informed regarding the colour discharge through text message also.

4. APPLICATION

The invention as described in the drawing finds applications in:

1. Washing Machines.
2. Laundry services
3. Dry cleaning services

5. CONCLUSION

This present disclosure provides a system for identifying colour discharging clothes from the others in using a smart technology. This system would enable us to take the colour discharging clothes from the others prior to washing thereby preventing the other clothes from getting spoiled.

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