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IOT Based Material Fault Detection System

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Abstract: Dresses are the one who used to get more expensive in their regular life. People love more different ways of clothing and they even love for getting dressing up for all the new occasions in their lifetime. Maximum of us love to spend more on dresses, so we always try to take branded clothes and without any flaws. Thus we find many dresses in the shops been get damaged without our knowledge and we find after buying it and cannot able to replace it. It produces an awkward situation. The proposed system is used to find the flaws in the materials before getting stitched into a material. This is been achieved by thus connecting our embedded controllers through IoT and manage them through Personal computers.

Keywords: Embedded controllers, IoT, Personal computer, material faults.

Introduction

The world is moving towards the branded products and can be an ability to protest for it. Thus, all they need is a perfect name for their perfect showcase and can be making love for it. The proposed system is mainly used for finding the fault in the dresses before it gets materialized into a dress[1].

The IoT system is defined for connecting things to things. And it ca able to say, the length and the material width and can able to easily update the defined values in the cloud for providing greater working efficiency of the system.

The embedded controllers used here mainly used for the controlling and detection of the material flaws, which were been already updated with the details for the regular flaws in the materials in the dresses.

The proposed system here defines suits not only for the material fault detection and also suits for fruit classification, a fault in glasses, pottery works, food classification and fault detection. The system is the same but needs some more addition in their hardware and software[1].

Literature Survey

Navneet Kumar's system defines the image processing and mat lab by using the predefined values of them updated to it and can be able to send data that are been detected as a fault tolerant one[2].

Priya gaur in her system defines the usage of embedded controllers in their work. It can be able to find them through the intensive scanning and reports the fault in the materials through 3D scanning methodology[3].

Wang luau, in her system, defines the idea of the highlighting the image of the system in their term and ripple factor shown in their graphical values. Thus the highlighted ripples are even distorted by noise[4].

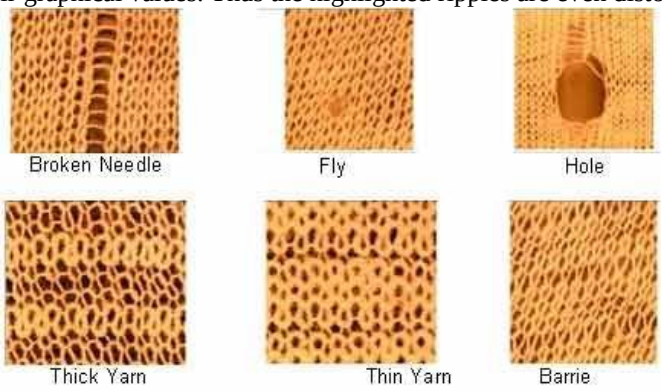

Fig: 1 fault materials

The Fig: 1 represents some type of the faults in the material which can be able to send to the controller and can be processed for the proceedings of the proposed system.

Components Required

1. Raspberry Pi 3
2. IoT
3. UV sensor

The system uses the raspberry pi model 3, which is a pocket-sized computer which itself computes the data. They only need a proper program for the processing. The controller is sufficient in transmitting and receiving the data without a transmitter/receiver device. Thus the controller can be able to control all the processing in the system which is connected to them[5]-[7].

Fig: 2 Raspberry Pi models 3

Internet of Things is the basic building block of the system and can be able to make the system work efficiently in the wireless mode and can be able to transmit/receive the data through the IP address registered to the cloud. The data can able to be stored without any intervention and can be accessed by the Personal computer[8],[12].

UV sensor is the electronic devices which capture the perfect image of the object that has been in the range of their limit. They have an 180^0 range of the wavelength and can be easily transmitted to the amplifier circuit. This is the output of the system[9]-[11].

Fig: 3 Ultraviolet sensors

Proposed System

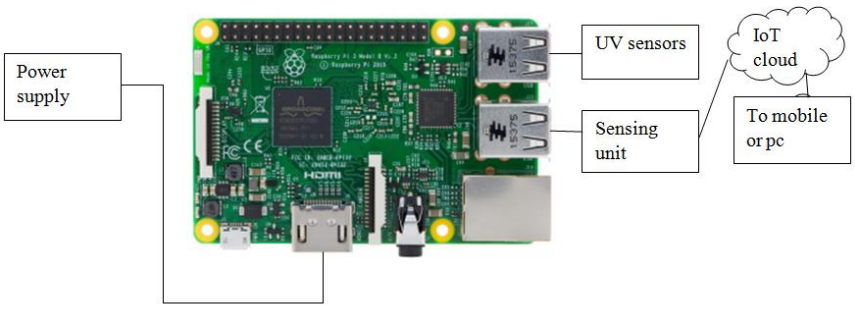

Fig: 4 proposed system block diagram

The system defined here produces the best results and can be able to differentiate the basic damages in the materials. First, let's see how it works, the defined system contains a conveyor belt fixed to it in which the

belt proceeds to run the long material. Once the material enters the detection unit the UV sensor starts sensing the defect in the material, if at once the defect is detected the system gets off and can be able to transmit the signal to the raspberry pi and start cutting the defected part. The defected part is removed to the bin and the system again starts on and continues doing the process of the detection. There are three UV sensors affixed over the conveyor belt, it processes the length and width of the material input and sends it to the IoT and also send an alert message if there is any fault in the system to stop the machine for again regaining the part for the processing.

S.No	Fault type	Inspection accuracy
1.	Broken needle	88%
2.	Fly	87%
3.	Hole	86.25%
4.	Thick yam	88%
5.	Thin yam	89%
6.	Barrie	84%

Table: 1Efficiency of the working system

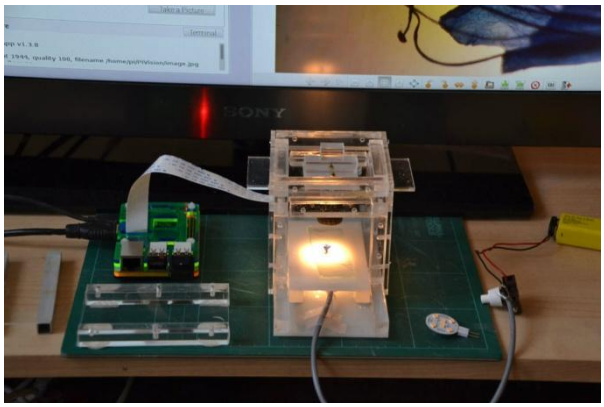

Fig: 5 proposed system model

Conclusion

The system we defined here is a basic detection for all the industrial oriented problems. It can also be further defined to classify the physical norms of the other features such as a fault in vehicles, a fault in the underground pipes and fruit classification systems. This can be a great endeavor for the nature to sustain its automation without human intervention.

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