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IMPLEMENTATION OF INDUSTRIAL AUTOMATION USING INTERNET OF THINGS

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ABSTRACT

IoT is a quickly advancing technology. In existing system human involvement is needed for examining the industrial devices and is a prolonged process to identify and produce alerts. Here we are building up a framework, which will consequently screen the modern applications and produce Alerts or Alarms automatically and take keen choices utilizing the idea of IoT. In this paper we control and monitor the industrial devices by employing IoT with the help of sensors, controller and actuator.

Keywords:*Automation, Cloud Server, Industrial devices, IoT, Sensors.*

I.INTRODUCTION

Internet of things is a currently booming technology which plays a vital role in inflicting control of physical devices over the internet that iscapable to gather the data. IoT in industrial automation has evolved into the universal progression in manufacturing and is examining to be a game changer for automation. Internet of things assists to develop modern technologies to intensify operations and enhance productivity. Internet of Things is the system of physical devices entrenched with sensors, digital machines, actuators, hardware, programs which empowers these items to communicate and share the data using internet.

IoT effects on automation in industries are extensively immense, which makes us to use smart phones, tablet computers, virtualized systems and more. Utilizing IoT the automation in industries has influenced commercial technologies in several applications. To bestow innovative and promising solutions IoT has procured large attention in the areas such as industries, home automation, smart cities, smart grids, connected cars and smart farming[1].The main aid that this technology afford in business intelligence symbolizes enormous challenging benefits for industrial organisations in their digitalization venture by combining IoT with industrial infrastructures.

Development of IoT begins from RFID(Radio Frequency Image Detection) technology, which utilizes electro-magnetic fields to consequently recognise and track labels appended to objects. By using this individuals can recognize, track and screen any objects with RFID tags. WSN(Wireless Sensor Networks) is another technology, which essentially utilize interconnected sensors to sense and detect the objects. Both of these methodologies are used in the forthcoming technologyIoT[2].

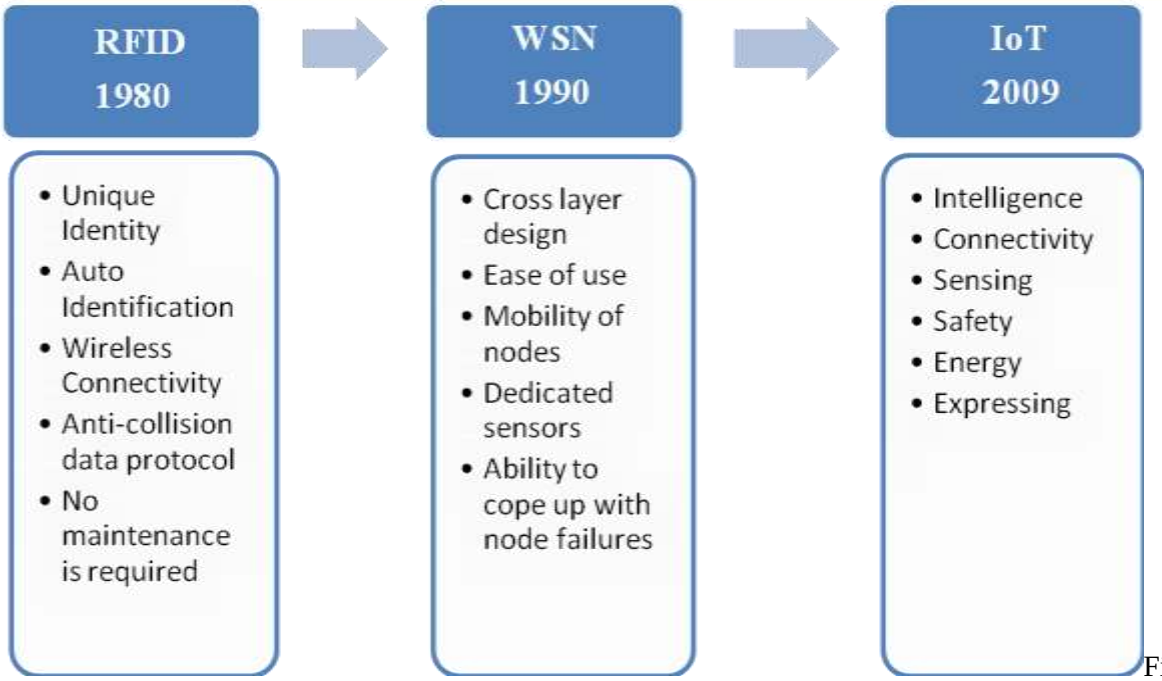

Fig 1. Evolution of internet of things

II. RELATED WORK

In order to comprehend the improvement of IoT in industries, this paper reviews the current research of IoT, key enabling advances, major IoT applications in businesses and identifies research patterns and challenges. The internet of things enables devices to be identified and controlled distantly crosswise over an already existing system framework. SMS/Email alerts needs to send however may have go issue[2].

In contrast we have deployed IR Sensors, smoke sensors, humidity sensors, temperature sensors along with NODEMCU controller, which overcomes the range problem while sending alert messages.

This paper surveys the current explores on IoT from the mechanical point of view. They firstly introduce the foundation and SOA models of IoT and talk about the key technologies that may be utilized as a part of IoT. Next they present some key mechanical uses of IoT. Later they broke down the explore difficulties and future patterns related with IoT. The principle commitment of this paper is that it centre aroundmechanical IoT applications furthermore, features the difficulties and conceivable research openings for future industrial researchers. This paperbriefs about the theoretical aspects of IoT. However, there is no specific implementation[3].

Since industrial automation is a versatile field, whereinwe chose toimplement in an icecream industry.

III. PROPOSED WORK

In this cutting edge period of computerization and assertive computing utilizing IoT offer promising solutions towards the automation of industry. Sensors such as Infra red sensors, Smoke sensor, Humidity sensor and temperature sensors are utilized to analyze the surroundings and object conditions. Both analog and digital signals are given to controller produced by sensors and are further sent to the android devices through cloud server. When it experiences uneven condition gadgets such as buzzers, alarms, engines, fans are used to take precise measures sent from the admin to the controller. At that point with the assistance of IoT it finds a way to take care of issues. In this we utilize cloud as database for versatility.

3.1 Methodology

To build a framework which will consequently scrutinize the mechanical applications to produce alerts and take smart decision and control devices utilizing the idea of IoT we have deployed many sensors to provide automation in ice-cream industry. One of the infrared sensors is used to count the number of cups and the other to detect the level of filling. Smoke sensor is used to detect the uneven conditions like smoke and fire. Humidity sensor is used to check the moisture level in the industry. Temperature sensor is used to notify the current room temperature. The major output of these sensors are digital in nature which are provided to the controller(NODE MCU). NODE MCU controls and monitors all the devices connected to it. Status of the devices is sent to the admin through the cloud server and appropriate decisions are made using databases.

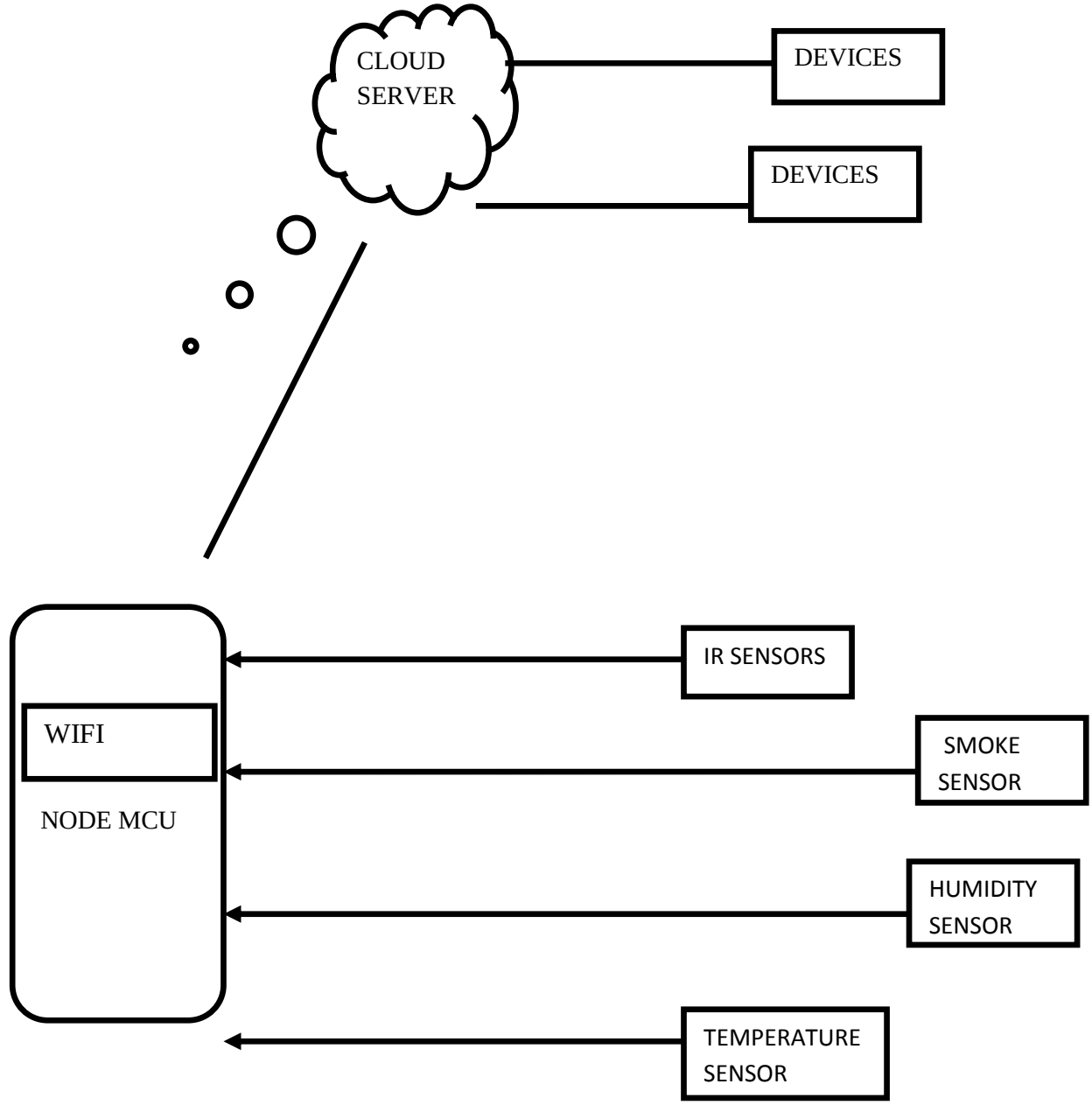

Fig 2: Block diagram of the system

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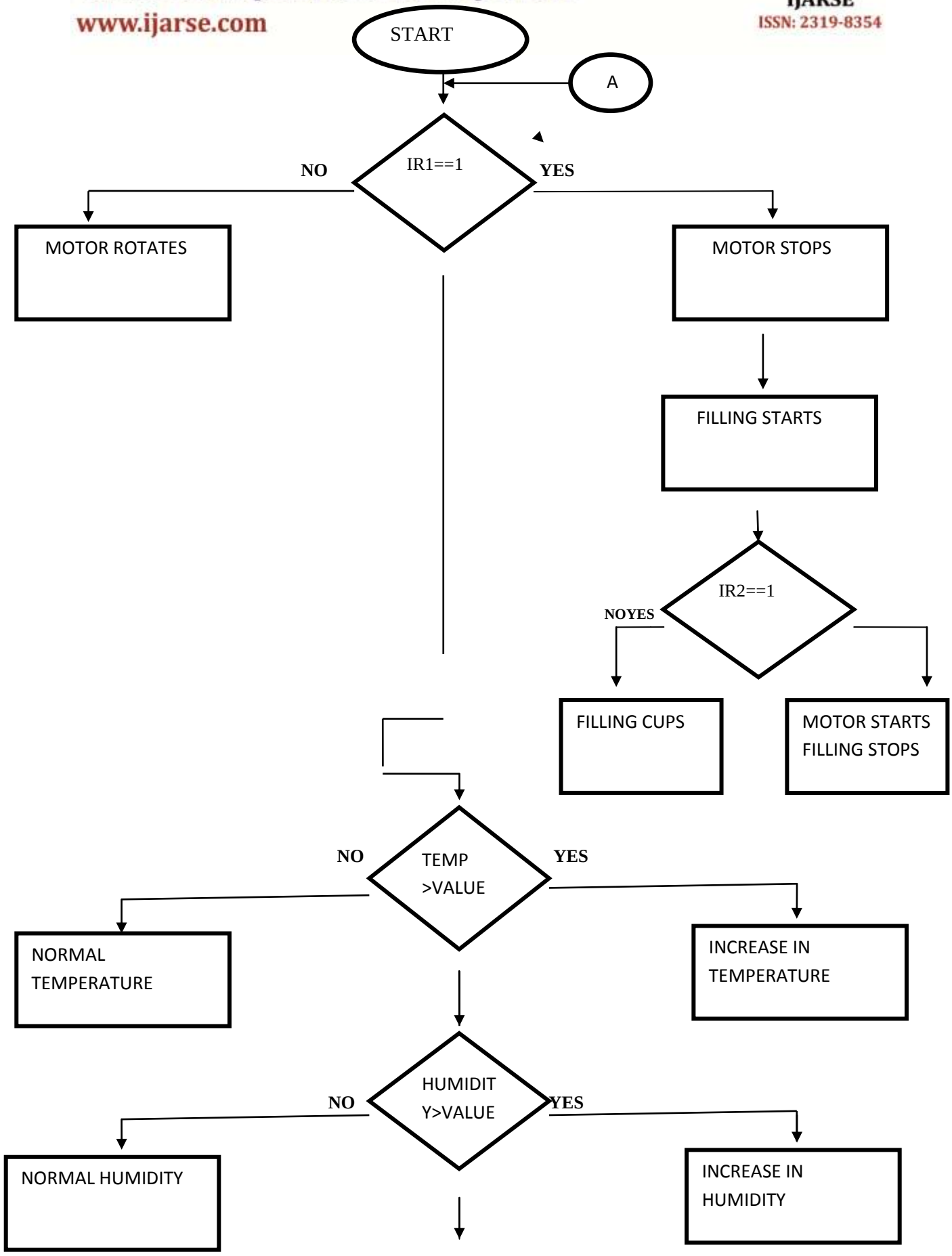

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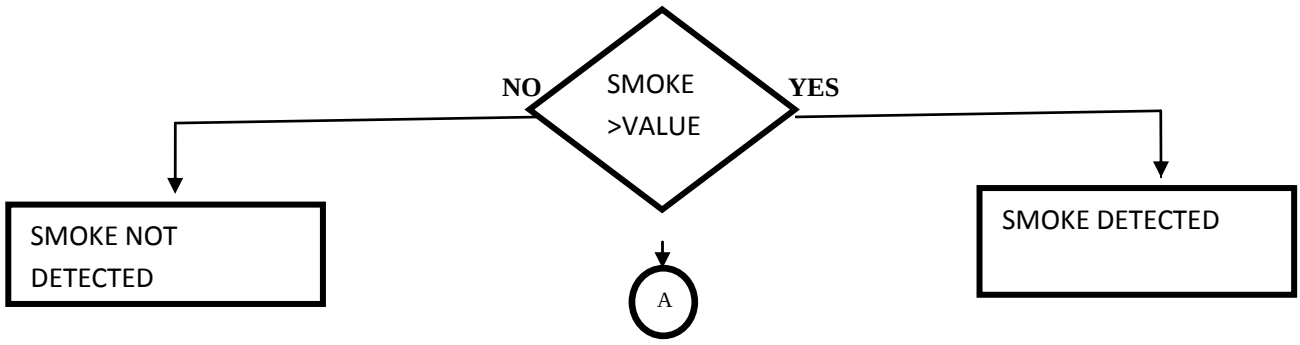

Fig 3: Design Flow of the system

3.2 Algorithm

STEP1: Start

STEP2: When the output of IR1 sensor goes high motor starts rotating else motor stops and filling starts. If the output of IR2 sensor is low filling continues otherwise filling stops and motor starts rotating.

STEP3: Initially a threshold value is set by the admin for temperature, humidity and smoke sensors. If the detected value exceeds the threshold value the output goes high thus LED glows and then appropriate decision is taken by the admin.

STEP4: Stop

IV. RESULTS AND DISCUSSION

Fig 4: Experimental result of the system

The devices are detected by the sensors and the present status of the device will further be sent to the admin by the controller NODEMCU through the cloud server.

V.CONCLUSION

These days we require everything automated. Prior we just screened the circumstances with assistance of cameras. To ease the manual overhead we have executed IoT in industries to examine and update the liable individual to take suitable measures, although this will partly satisfy our necessity. At times it will be delayed in this method. For this reason we are building up a system for automation by deploying sensors such as IR, temperature, smoke, humidity in wide areaover the machines and instruments to direct and check the devicesby using the concept of IoT.

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