iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 **Issue:** VII **Month of publication:** July 2017

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor:6.887
Volume 5 Issue VII, July 2017- Available at www.ijraset.com

Monitoring Smart City Applications using Raspberry PI Based on IOT

Prof. S A.Shaikh[1], Suvarna A. Sonawane[2]
[1,2]*E& TC department Pravara Rural Engineering College Loni, Savitribai Phule Pune University, India*

Abstract: ***Smart city is the development goal to monitor quality of resource in the city .To improve good management and faster development of the city required necessity is to upgrade healthy and safe cities that delivering real time services and latest facility .To implementing concept of smart city use IoT concept by which easy wireless communication is possible .System consist of sensors ,collect different types of data from sensors and transfer to the Raspberry Pi3 controller. Acquired output from the controller is sended to the control room through the E- mail and also display on the personal computer.***
Keywords : IoT , Sensors , Wireless communication ,Raspberry Pi3 controller , E-mail , Personal computer

I. INTRODUCTION

For developing the smart city area we are managing the various applications like drainage line blockages, garbage level , power electricity, water distribution supply. To do this, we implement Iot concept using Raspberry Pi3 controller. In the proposed system Internet plays significant role in automation of managing smart city elements. By which easy wireless communication is possible. If common peoples is well known about internet then they do can do many things of public awareness of clean and intelligent city .So there is a need of such an effective and advanced techniques in smart city management.

A. Main Objective

1) An effective implementation for Internet of Things used for monitoring smart city elements in the city .
2) Common people usually on their home interact with internet the settings like some garbage collection parameters, power electricity, drainage flow, water distribution flow etc., and regulate accordingly.
3) Cleaner cities and Intelligent management of the electricity in the city.
4) Proximity sensors are used to monitor the status of the garbage tank. By monitoring garbage level regurarly, it improves environment quality and cleanliness of the city
5) The Drainage line monitoring uses sensors to detect drainage water level and blockages in the drainage.
6) Water distribution system check water flow rate continuously , as well as send automatic mail ,display on monitor if water level is outside of an expected normal range.
7) In the power electricity , if the power cut occurs at home, office, etc meter gives alert to nearest distributer and Consumer and owner get clarity of electricity information
8) Main objective is to obtain an effective low-cost and flexible solution for condition monitoring and infrastructure management in city.

II. LITERATURE SURVEY

Kasliwal Manasi H.et .al. proposed garbage level using ultrasonic sensor and it will monitor through GSM module. Controller is applicable using GSM to interacting the sensor system [1]. Joke O. ADEYEMO et al. aims the development of an architecture depend on smart city technique, for garbage materials. Implement concept using Arduino UNO microcontroller board, proximity sensor, breadboard, refuse bin and a personal computer[2]. Jalpa shah et.al. proposed smart city enables the effective utilization of resources and better quality of services to the citizens of the particular area. To provide services such as air quality management, waste collection, weather monitoring the basic parameters are temperature, humidity and CO2 using IoT technology[3]. Aishwarya Pandey.et.al. presents that the wireless network technology has the potential to deliver that development in efficiency of energy consumption,, physical ,social and economic, security, health, education and more parameter of the city[4]. Ravi Ramakrishnan et.al aims at noifying the recent energy developments, identify the use of ICT technology including Cloud and Internet being adopted worldwide and it prepaid energy meter is an device that collect and save consumption of electrical smart grid and uploads the data through GSM at intervals to control room with transmits it to for monitoring and billing about energy

consumption[5].Sanghyuk Jung.et.al. proposed GC mechanism, called link dependance garbage collection , which gives fast selection and additional operation with small required space to existing page-mapped FTLs[6].Dario Bonin .et.al .introduces smart city concept introduced related to the ALMANAC project and discussion carried out related to the waste materials.This paper aims to integrate ICT networks and metro networks to offer facilities to consumer[7]. Murgesh SK.et.al. Studied about water management and surrounding atmospheric data and blockages under drainage system[8].Abhimanyu Singh.et.al. Discussed an IOT based methodology has been proposed as a new solution. The methodology proposes use of Infrared sensors to record data from the garbage tank and that of Raspberry Pi2 Development Board to communicate this information to the control room[9]. R. Kumar. et.al. presents some of the many parameters of wireless technology are smart parking, smart home, smart city, smart environment and health monitoring process in the smart city [10].K Fukuyama.et.al studied models the decision mechanism by monitoring to garbage and its classification and the survey results effective management of the system for better classification are examined [11]. IoT primer gives idea about the basic concepts of IoT. It mainly focuses on Enablers, Platforms, & Industrials The IoT building blocks will come from those that can web-enable devices, provide common platforms on which they can communicate, and develop new applications to capture new users[12].

III. PROPOSED SYSTEM

A. Block Diagram Description is as Follows

Block diagram of the system consists of Raspberry Pi3 controller , LCD display, proximity sensor , DTH11 sensor, Float drainage and water level sensor, IR sensor ,Phase detection circuit, Relays, solenoid valve ,pump etc. which are shown in fig.1. Sensors senses information and gives this information to the Raspberry Pi3 module which process on further and displays output values on LCD display.

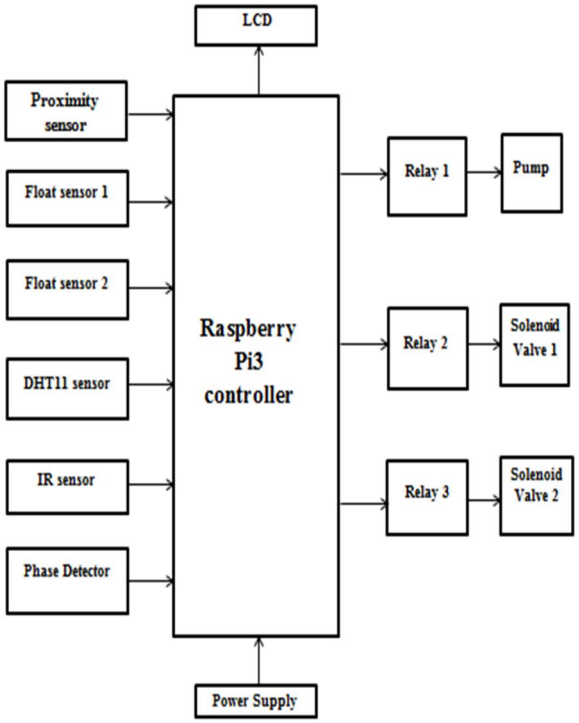


Fig 1. Block Diagram of System

B. Modules Used for the Processed System can be Summarized as below

1) *Raspberry PI3 Controller :* Nowadays ,Raspberry Pi 3 Model B controller is most poupular. It provides 4 USB ports ,Ethernet port, display strips ,camera strips,64 GPIO pins. This controller most used for the internet of things applications.

2) *Proximity Sensor:* A proximity sensor emission of energy transmitted by radiations to target an object without physical contact. Proximity sensor are used to check the level of the garbage in the tank of particular are
3) *DTH11 Sensor:* The DHT11 measures humidity and temperature parameters around the garbage tank area.
4) *Float Level Sensor for Water System :* Water level sensors detect the level of water whether the substance is above or below the sensing point so,it results motor on and both float valve get started to extract water from the water tank
5) *IR Sensor :* An infrared sensor is an electronic device used to find blockages in the drainage .Some objects are invisible to our eyes that objects emits infrared radiation so IR sensor is used in order to sense many more elements of its surroundings.
6) *Phase Detector :* In the power electricity, if the power cut occurs at home, office, etc meter gives alert to nearest distributer and Consumer and owner get clarity of electricity information. It gives better result for power loss. It measures high pulse of the phase using opto coupler circuit.
7) *Liquid Crystal Display :* 16x2 LCD is used to display result parameter of the proposed system. The parameters values such as high or low ,phase detection and some blockages in the drainage.
8) *Relays:* Relays are used when you need to switch higher currents to start the motor and solenoid valves if the nominal range of water level is crossed.
9) *Solenoid Valves :* Solenoid valves are the most frequently used control elements flow of water .If the water level is high then the motor is on and start the valves to release the water overflow.

C. Flowchart

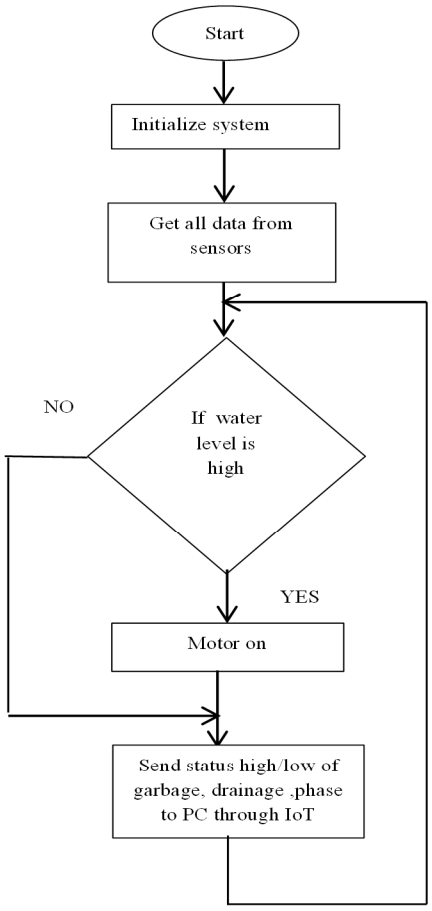


Fig 3. Flowchart of transreceiver of system

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor:6.887
Volume 5 Issue VII, July 2017- Available at www.ijraset.com

IV. RESULT

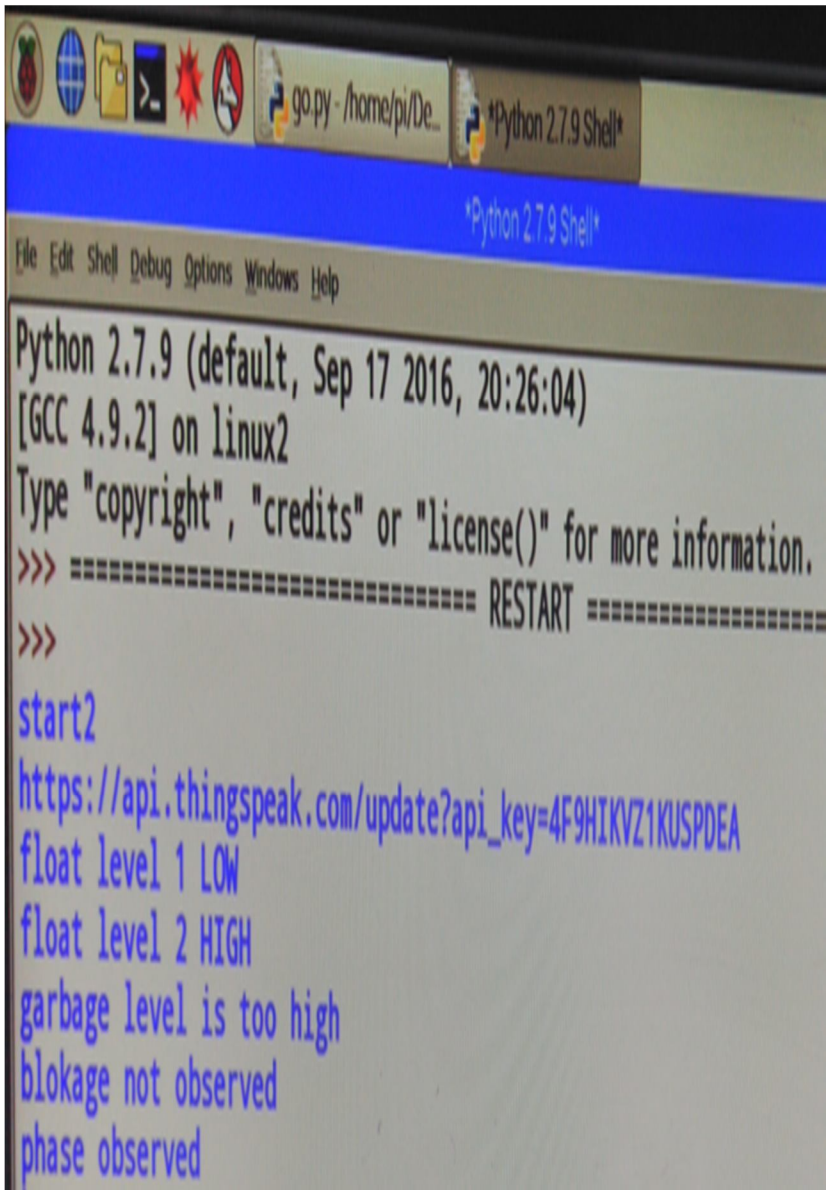


Fig 3. Result display on pc

V. CONCLUSION

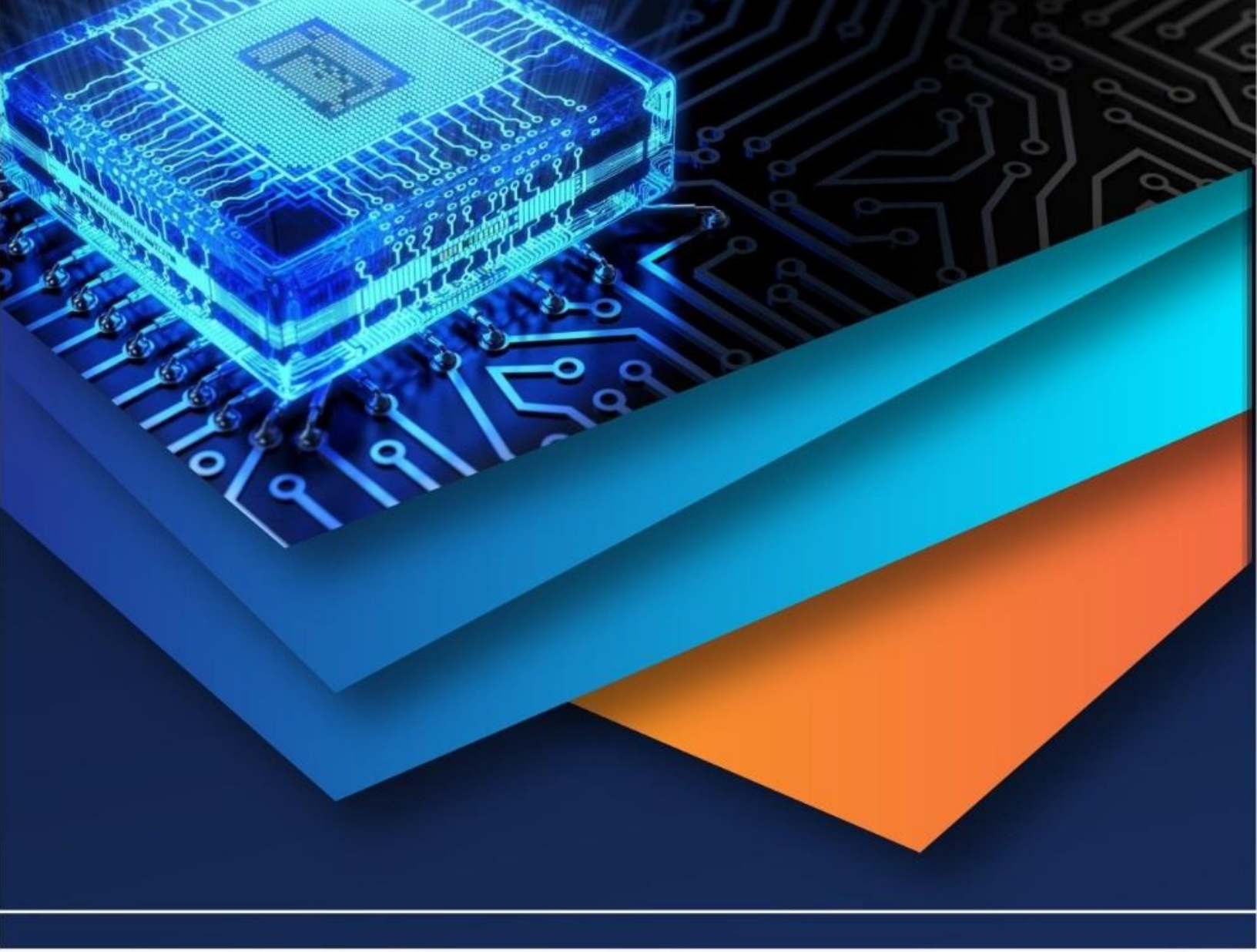
Internet of Things is applicable for monitoring regular smart city applications by means of low cost and economic valuable sensing system. For measurement of parameters of the smart city by smart sensors and transmission of results via internet is being display in simple language. By evaluating past literature review we came to know that there is need to notify control room about received condition of the city directly via internet so all results are directly sent to control room via send mail command in Raspbian software to take appropriate action against it. So, monitoring smart city applications maintain healthy and hygienic environment to live by using IoT technology and become development of smart and safe cities.

VI. ACKNOWLEDGMENT

I would like to say thank to my Respected Guide Mr. Shaikh Shakil for his valuable guidance in all hard times and helping me to complete this work.

REFERENCES

[1] Kasliwal Manasi H. "A Novel Approach to Garbage Management Using Internet of Things for Smart Cities" International Journal of Current Trends in Engineering & Research (IJCTER) e-ISSN 2455–1392 Volume 2 Issue 5, May 2016 pp. 348 – 353.
[2] Joke O. ADEYEMO "Smart City Technology based Architecturef or Refuse Disposal Management" IIMC International Information Management Corporation, 2016.
[3] Ravi Ramakrishnan "Smart Electricity Distribution in Residential Areas" International Conference on Internet of Things and Applications (IOTA) Maharashtra Institute of Technology, Pune, India 22 Jan - 24 Jan, 2016.
[4] Jalpa Shah "IOT enabled Environmental Monitoring System for Smart Cities"2016 International Conference on Internet of Things and Applications (IOTA)Maharashtra Institute of Technology, Pune, India 22 Jan - 24 Jan, 2016.
[5] vishwarya pandey "Review Paper on Internet of Things (IOT)", National Conference on Technological Advancement and Automatization in Engineering, January 2016.
[6] Sanghyuk Jung, "Garbage Collection for Low Performance Variation in NAND Flash Storage Systems" IEEE transactions on computer-aided design of integrated circuits and systems, vol. 34, no. 1, January 2015.
[7] Dario Bonino "ALMANAC: Internet of Things for Smart Cities" 2015 3rd International Conference on Future Internet of Things and Cloud".
[8] Muragesh SK "Automated Internet of Things for Underground Drainage and Manhole Monitoring System for Metropolitan Cities" International Journal of Information Computation Technology.ISSN 0974-2239 Volume 4, Number 12 (2014), pp. 1211-1220.
[9] Abhimanyu Singh "IOT based Waste Collection System using Infrared Sensors".
[10] K. Fukuyama "Effectiveness of Social Systems Sustained by Residents' Participation: A Collection System of Classified Garbage and Rubbish".
[11] IoT primer, "The Internet of Things: Making sense of the next mega -trend", Equity Research, September 3, 2014.
[12] http://en.wikipedia/wioki/Raspberry pi.
[13] Exploratory research on smart cities IIT'S.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY