iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** V **Month of publication:** May 2019

DOI: https://doi.org/10.22214/ijraset.2019.5542

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: 7.177
Volume 7 Issue V, May 2019- Available at www.ijraset.com

Automated Smart Drip Irrigation System using Android and IoT

Mr. Amol Gadage[1], Mr. Aniket Gaikwad[2], Mr. Vishal Gawhane[3], Mr. Akash Are[4], Dr. Mininath Bendre[5]
[1, 2, 3, 4, 5]*Department of Computer Engineering, PREC Loni, Savitribai Phule Pune University*

Abstract*: *As we know there are many issues surrounding our agriculture sector today lack of proper technology has caused a decline in production in recent years. As in other countries, we see that there are many technological advancements that have helped in the increase in Production. IoT is one of the technologies that can make a very large on the impact on the agriculture sector. IoT stands for Internet of things it means that things will be connected to the internet and communicate with each other. In our system we have designed a system that can monitor parameters like temperature, humidity, Gas levels, Light detection, etc. all these parameters will be monitored locally, our system will be connected to the internet via a Wi-Fi module. All the data that has been collected by the system then will be uploaded to the server where it will be displayed using graphs and will be available for analysis.

Keywords: IoT, Android, Drip Irrigation, Application, Arduino, Motor, Web.

I. INTRODUCTION

In 1995, “thing to thing” was invented by BILL GATES. In 1999, IoT (Internet of Things) was arising by EPC global. IOT interconnects human to the thing, thing to thing and human to human. The goal of IoT is to bring out a huge network by combining different types of connected devices. IoT targets three appearance Communication, automation, cost saving in a system. IoT empowers people to carry out routine activities using the internet and thus saves time and cost making them more productive. IoT enables the objects to be sensed and/or controlled remotely across the existing network model. IOT in environmental observation helps to understand regarding the water and air condition, temperature, and conditions of the soil, and additionally monitor the incursion of animals into the sphere. IOT can also play a significant role in precision farming to enhance the productivity of the farm.

II. EXISTING SYSTEM

Balaji Banu [1] designed wireless sensor networks to observe the conditions of farming and increasing crop yield and quality. Sensors are used to monitor different conditions of environment like water level, humidity, temperature, etc., The processors ATMEGA8535 and ICS8817 BS, analog to digital conversion and wireless sensor nodes with wireless transceiver module based on Zig bee protocol are used in the designing the system. Database and web application is used to retrieve and store data. In this experiment, the detector node failure and energy potency area unit managed.

Liu Dan [2], Joseph Haule, Kisangiri Michael [3] and Wang Weihong, Cao Shuntian [38] carried out experiments on intelligent agriculture greenhouse monitoring system based on ZigBee technology. The system performs information acquisition, processing, transmission and reception functions.

The aim of their experiments is to understand greenhouse surroundings system, wherever the of system potency to manage the surroundings space and cut back the money and farming price and additionally save energy. IOT technology here is based on the B-S structure and cc2530 used like processing chip to work for wireless sensor node and coordinator. The gateway has Linux operating system and cortex A8 processor act as core.

Overall the look realizes remote intelligent watching and management of greenhouse and additionally replaces the standard wired technology to wireless, additionally reduces personnel price.

Joseph haule [3], Dragoş Mihai Ofrim, Bogdan Alexandru Ofrim and Dragoş Ioan Săcăleanu [18] have proposed an experiment that explains the use of wsn used in automating irrigation. Irrigation management and rescheduling supported wsn ar powerful solutions for optimum water management through automatic communication to grasp the soil wet conditions of irrigation style. The process used here is to see the right frequency and time of watering are vital to make sure the economical use of water, top quality of crop detection delay throughput and cargo. Simulation is done for agriculture by OPNET. Another design of wsn is deployed for an irrigation system using Zig bee protocol which will impact battery life. There ar some drawbacks as wsn remains beneath the development stage with unreliable communication times, fragile, power consumption and communication may be lost in the agricultural field. so automate irrigation system and schedule based on wireless sensor networks are used. WSN uses low power and

an occasional rate and therefore energy economical technology. All the devices and machines controlled with the assistance of inputs received via sensors that area unit mixed with soil. Farmers will analyze whether or not the system performs in unremarkably or some actions area unit got to be performed.

Vijay Kumar [4], Lin Zhang, Min yuan, Deyi Tai, Xia Oweixu, Xiang Zhan, Yuanyuan Zhang [13] studied the work of rural farming community that replaces some of the traditional techniques. The sensor nodes have several external sensors namely leaf wetness, soil moisture sensor, soil pH, atmospheric pressure sensors attached to it. Based on the soil moisture sensor the mote triggers the water sprinkling during the period of water scarcity and switches off after adequate water is sprinkled. This leads to conservation and soil pH is shipped to the bottom station and successively base station intimates the farmer regarding soil pH via SMS mistreatment GSM model.

This info helps the farmers to scale back amount of fertilizers used. A development of rice crop observation mistreatment WSN is planned to supply a assist to farmers in real time observation and increasing the rice production. The automated control of water sprinkling and ultimate supply of information is implemented using wireless sensor network.

G. Nisha [5], Chun-ling Fan, Yuan Guo [10] proposed a wireless sensor based automated irrigation system to optimize water use for agricultural purpose.

The system consists of a distributed wireless detector network of soil wetness, and temperature sensors mounted within the crop field. Zigbee protocol is used to handle the sensor information and water quantity programming using an algorithm with threshold values of the sensors sent to a microcontroller for the irrigation system. Data inspection is done using by using a solar panel and cellular internet interface. A wireless camera is mounted in the crop field to observe the illness space exploitation image process technique.

III.PROPOSE SYSTEM

1) Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has fourteen digital input/output pins (of that six are often used as PWM outputs), six analog inputs, a sixteen rate quartz, a USB association, an influence jack, an ICSP header, and a reset button.
2) *Humidity:* We will use humidity sensor for sensing the humidity of soil. After that this signal is sent to Arduino. In that Arduino a particular set point is given and if it is below or above it take action likewise.
3) *Temperature:* We will use thermocouple as a temperature sensor. Temperature is sensed an after that this signal is sent to Arduino. In that Arduino a particular set point is given and if it is below or above it take action likewise.
4) *Intensity:* Intensity will be sensed by the photodiode. If the intensity of sun increases then green net is used for reducing the intensity using Arduino.
5) *Moisture Sensor:* The moisture sensor will be used to measure the moisture level.
6) *Exhaust Fan:* The fans ought to deliver the desired air at 15mm static pressure. The maximum center to center spacing between the 2 fans ought to be of 7.5m. The height of the fans is to be determined based on the plant height which is proposed to be grown in the greenhouse. The fan blades and frame area unit to be made from non-corrosive materials like aluminum/stainless steel.
7) *Relative Humidity Control:* The humidistat coupled to water current pump to regulate the ratio of soil. Here we maintain the relative humidity of soil. This is one type of watering system in this soil sensor is used to find out the humidity in soil and if it is less then the motor pump starts and water is giving to the soil.
8) *Light Intensity Control:* In bound areas wherever natural illumination is absent or terribly low, illumination for plants is also provided by artificial sources. Incandescent bulbs generate excessive heat and ar disappointing in most instances. Fluorescent tubes are helpful because of the sole supply of sunshine for African violets, gloxinias and lots of foliage plants that grow satisfactorily at low light-weight intensities. Excessive strength destroys pigment although the synthesis of this inexperienced pigment in several plants depends upon light-weight. Chrysanthemum is a classic example of a short-day plant. However, flower buds won't type unless the night temperature is high enough. Chrysanthemum is patterned on a year-around basis as a cut flower or potted plant just by dominant the length of day and temperature.
9) *Internet:* All the data will be uploaded on the server which you will be able to monitor and control from any device which is connected to the internet.

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 7 Issue V, May 2019- Available at www.ijraset.com

IV.SYSTEM ARCHITECTURE

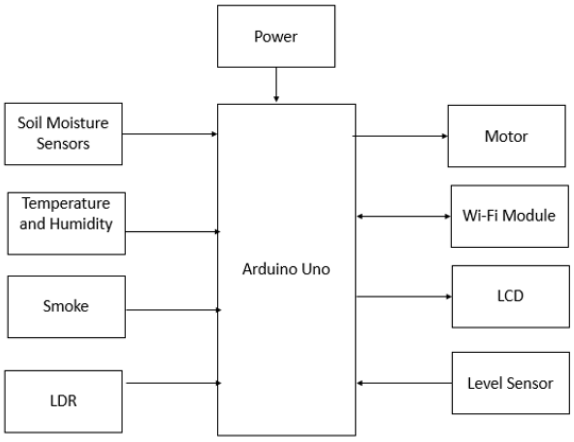
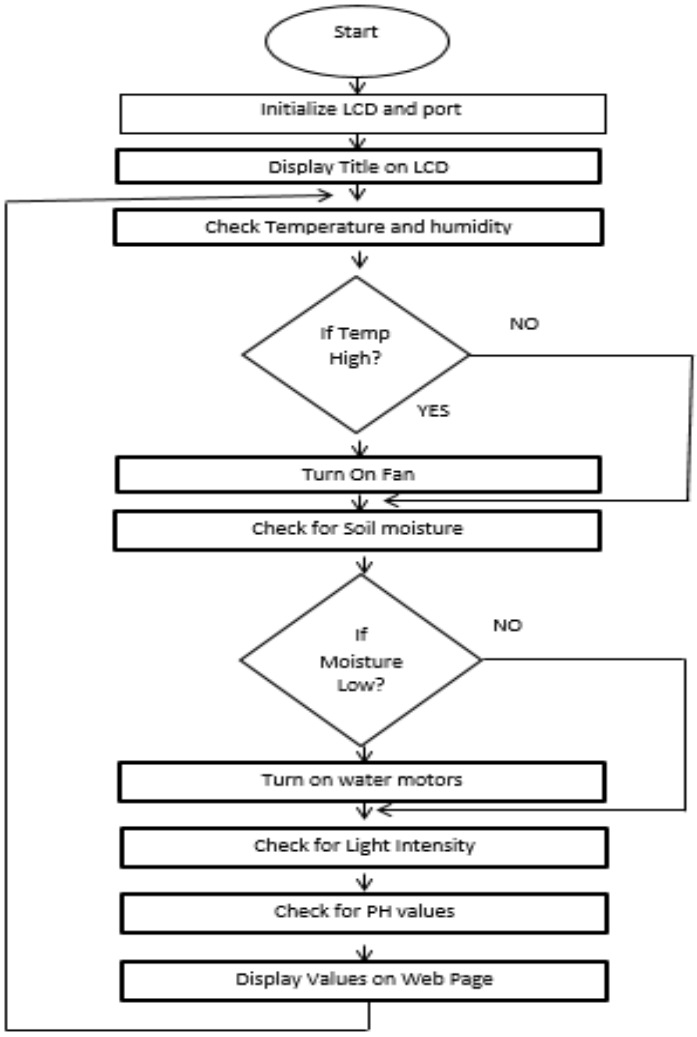


Fig1: Block diagram

Figure 1.1 System Architecture

V. FLOW CHART



International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 7 Issue V, May 2019- Available at www.ijraset.com

VI. ADVANTAGES

A. This software is freely available.
B. Low Cost and Easy to use.
C. Data can be accessed from any part of the world.

VII. RESULT

We inputting sensor data and Arduino managing all control. Also control from android application.

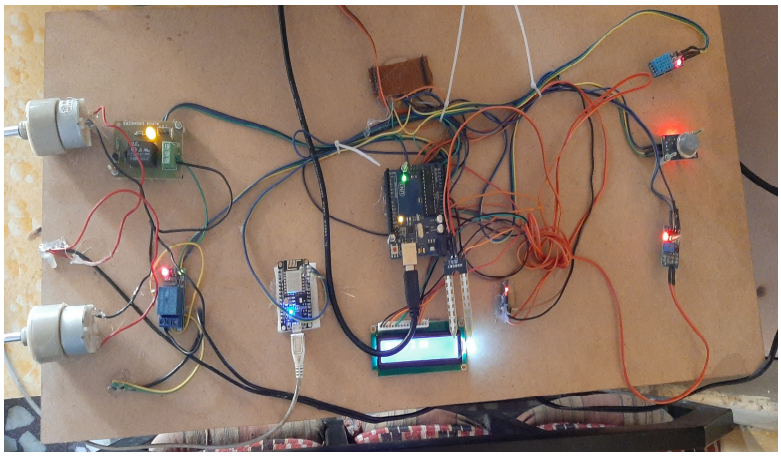


Fig. Hardware

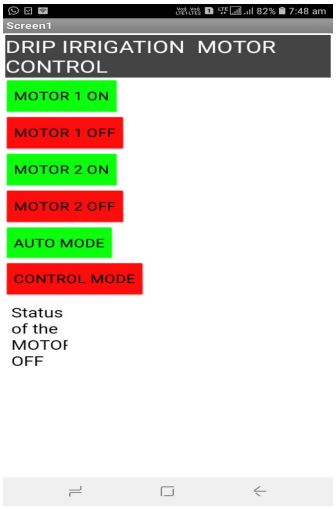


Fig. Android App

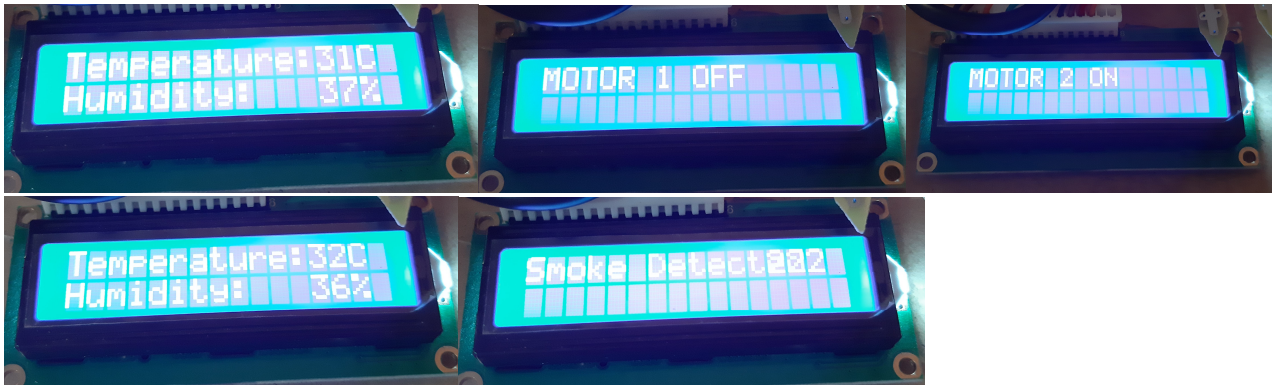


Fig. Display

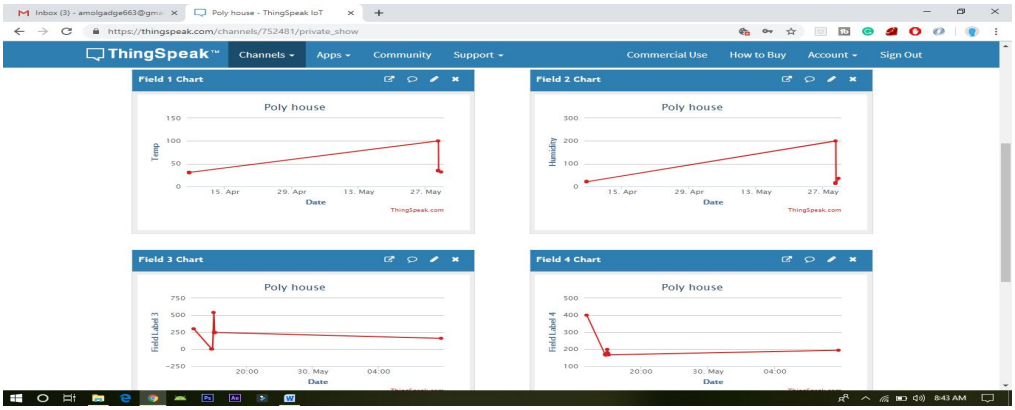


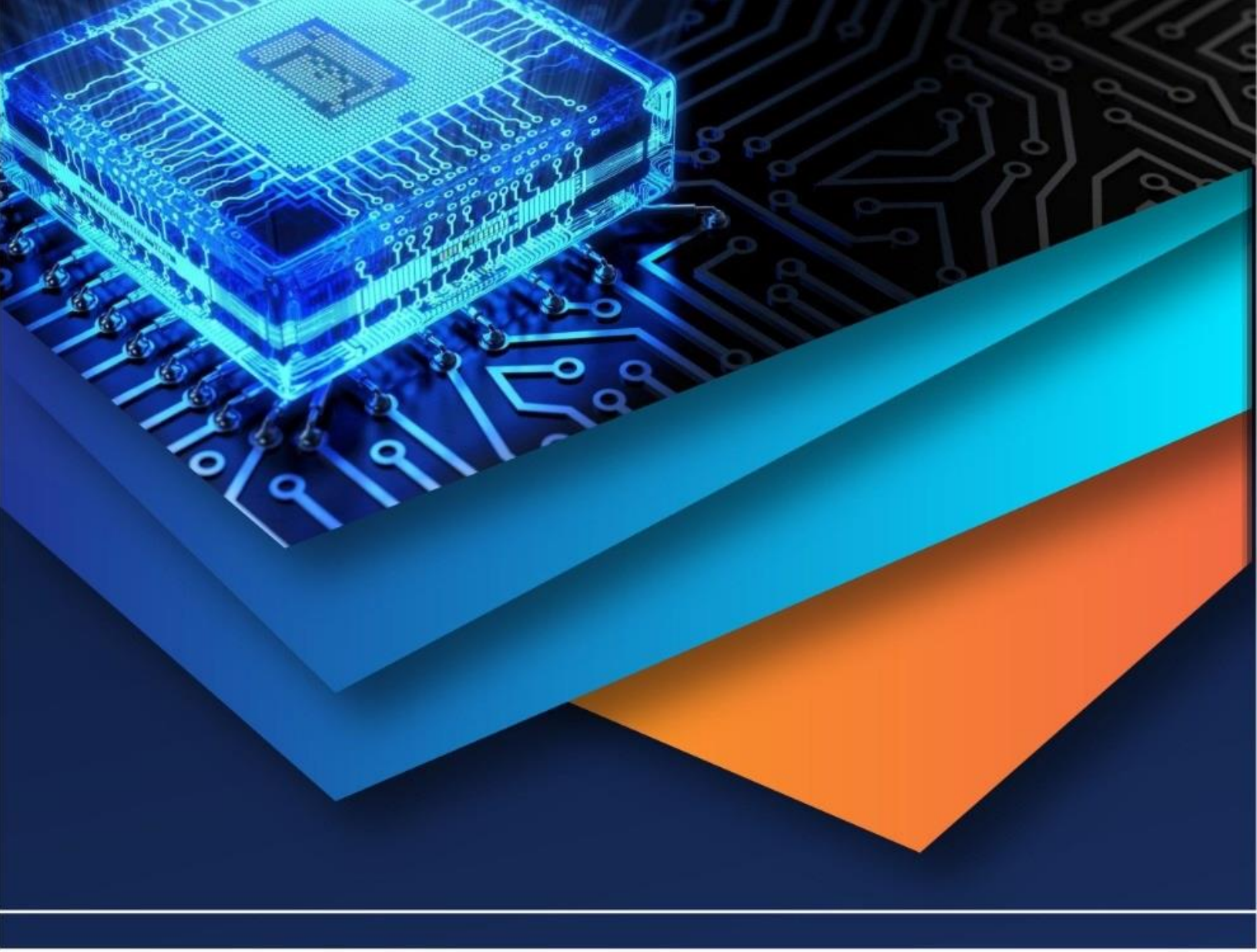
Fig. ThingSpeak Sever Chart

IX.CONCLUSIONS

Hence we have designed an IoT based system for monitoring the parameters of Smart Drip Irrigation using android and IoT.

REFERENCES

[1] Vamil B. Sangoi, "Smart security solutions," International Journal of Current Engineering and Technology, Vol.4, No.5, Oct-2014.
[2] Simon L. Cotton and William G. Scanlon, "Millimeter - wave Soldier –tosoldier communications for covert battlefield operation," IEEE communication Magazine, October 2009.
[3] Alexandrous Plantelopoulous and Nikolaos.G.Bourbakis, "A Survey on Wearable sensor based system for health monitoring and prognosis," IEEE Transaction on system, Man and Cybernetics, Vol.40, No.1, January 2010.
[4] B.Chougula, "Smart girls security system," International Journal of Application or Innovation in Engineering & Management, Volume 3, Issue 4, April 2014.
[5] Hock Beng Lim, "A Soldier Health Monitoring System for Military Applications," International Conference on Body Sensor Networks.
[6] Palve Pramod, "GPS Based Advanced Soldier Tracking With Emergency Messages & Communication System," International Journal of Advance Research in Computer Science and Management Studies Research Article, Volume 2, Issue 6, June 2014.
[7] http://www.security.honeywell.com/hsc/products/intruder-detectionsystems/ sensor/ motion/ dual-tec-commercial /790177.html
[8] http://chapters.comsoc.org/vancouver/BTLER3.pdf
[9] Radhika Kinage, Jyotshna Kumari, Purva Zalke, Meenal Kulkarni, Mobile Tracking Application, International Journal of Innovative Research in Science, Engineering and Technology , Issue 3, March 2013.
[10] Nazir Ahmad Dar and Afaq Alam Khan, An Implementation Of Lbs, Location Manager, Services And Web-services In Android, ISST Journal of Mathematics & Computing System,Vol. 4 No. 1, (January-June 2013), p.p.49-54.
[11] Sonia C.V*, Dr. A.R.Aswatha,An Android Application To Locate And Track Mobile Phones, International Journal Of Engineering Trends And Technology (IJETT) – Vol. 4 ISSUE 5- May 2013



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY