iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 6 **Issue:** VII **Month of publication:** July 2018

DOI: http://doi.org/10.22214/ijraset.2018.7073

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 6 Issue VII, July 2018- Available at www.ijraset.com

Smart Window Control System based on GSM Network

Vijayshree[1], H.M.Preeti[2], Dr. Baswaraj Gadgay[3]
[1] *Dept. of VLSI & Embedded systems VTU Centere for PG Studies Kalaburagi, Karnataka, India*
[2] *Assistant professor, VTU Centre for PG Studies Kalaburagi, Karnataka , India*
[3] *Research Guide & professor, VTU Centre for PG Studies Kalaburagi, Karnataka , India*

.Abstract: For the smart windows system requirements of intelligent home, we have designed a kind of control system for smart window. The core of this control system is the Arduino uno r3, The system can realize transmission of wireless data through the GSM module and realize measuring of environmental parameters through several sensors; realize flexibly driving of DC servo motor through the program .The system has the characteristics of simple circuit, low cost, stability Reliability.
Keywords*: Arduino uno r3, GSM Module, DC Motor*

I. NTRODUCTION

Eyes are the Windows of the soul and window is the eye of our room, the importance of window to building, residents is now already aware of people in the city' life. Sometimes we go forget to close the window, suddenly In rain, we are in trouble. Sometimes because of oversight, poisonous gas cannot spread out of Windows and we are in fearful trouble. Therefore we have designed a set of intelligent window control system based on GSM wireless communication module. collecting environmental parameters through the corresponding sensors, The system can realize intelligent exhaust, Intelligent security, Automatic protection of rain .This system's Mechanical and Electrical parts is just some machinery connecting rod structure added in the original form structure Our system can control the window open and closed Through the dc motives .Operation of smart window is very convenient. When it rains ,we need to close the window to ensure that our room does not get flooded. We Usually do not think much of such things that we do without much thought. However, for the disabled ,getting to the windows and closing them can be a great ordeal. It would be nice if the windows can close themselves at the press of button or else did not even need to press the button. When it rains ,automatically close the windows, when it dry, automatically open the window. For the brilliant windows framework necessities of keen home, we have planned a sort of control framework for savvy window. The core of this control system is the Arduino uno r3, The system can realize transmission of wireless data through the GSM module and realize measuring of environmental parameters through several sensors; realize flexibly driving of DC servo motor through the program . The system has the characteristics of simple circuit, low cost, stability Reliability**.**

II. LITERATURE SURVEY

In [4] Design of intelligent window system based on multi sensor. Recently, the home furnished windows are mainly manipulated by manually control. To find out a new kind of smart window characteristic of safety ,practical and humanized intelligent has been a hot to pic concerned all around. In this paper STC89C52RC microcomputer is selected as control unit.

If there is an unknown object breaking into the environmental detected, smoke sensor will start safety measure. Furthermore, temperature and humidity sensor decorated on the smart window is utilized to detect the temperature and humidity all around.

With the combination work of those sensor instructed above, stepper motor is automatic controlled to manipulate the window, thus meeting the basic demand of smart design.

The components of the circuit in the control system is reliable and inexpensive, so it is convenient to maintain.

In [2] Design of a Multi-functional Intelligent Window Based on PLC", The system's overall plan and frame chart were made according to the request of this topic. And then I selected the appropriate PLC ,sensors and so on. The signal processing circuit has been designed. The I/O of the system was allotted.

The electricity control diagram in principal was established . The procedure according to the request of this system was completed. The experimental results illustrate the favourable performance of this intelligent window. This intelligent window can raise the quality of living environment and save people's labor.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 6.887
Volume 6 Issue VII, July 2018- Available at www.ijraset.com

III. PROPOSED DESIGN METHODOLOGY

This system consists of arduino uno r3, GSM module, sensor module, power supply module etc parts. Among them, arduino uno r3 control module is composed of 14 digital pins leads out I/O ports. The I/O ports may control the motor driver circuit, Automatic lock drive circuit. Power supply of 5v will be given. And we are using LCD in order to display temperature. Using temperature sensor we are come to know about temperature. Whenever temperature is above 35'c at that time window will be open and fan also turns on. Whenever temperature is above 45'c at that time window will be closed so that room didn't get heat and fan turns on. For normal person we can open and close windows but for disabled person it will be difficult. We can turn on fan by using relay. In arduino we have 200Ma but fan works on 12v and 1000mA hence we are using ULN2003 driver ic hence it can improve current. Relay is SPDT Relay we are using. Water sensor is use to detect rain whenever it detects rain at that time window will be closed so that room didn't get flooded and whenever rain stops window will be open. we also have comparator ic LM324 ic it converts analog to digital. Ldr sensor is used whenever it receives low light intensities at that time window will be closed and light turns on. Smoke sensor is used to detect smoke whenever it detects smoke at that time window will be open for air ventning so that person didn't get suffocated and we are using GSM in order to send message to relative of that person so they may come and help the person. Here we are using brush less dc motor in order to control the windows. 10k potentiometer is used to adjust sensitivity of LDR and smoke sensor.

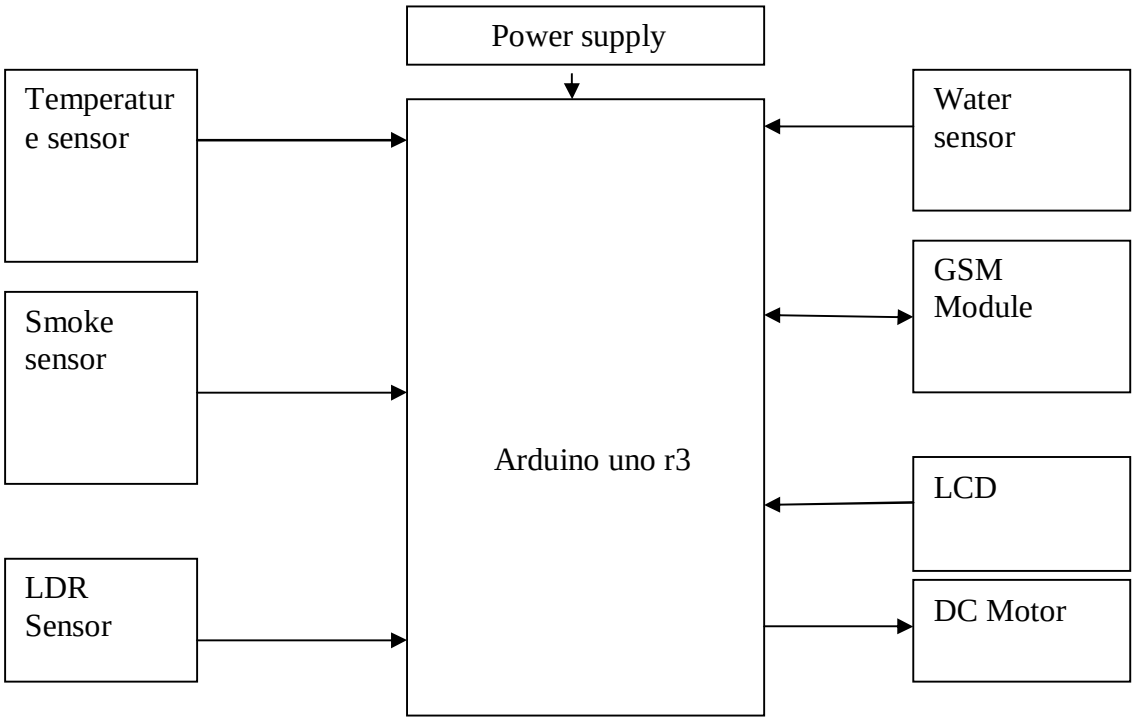


Fig 1: purposed method for smart window control system based on GSM network

IV. HARDWARE IMPLEMENTATION

A. Power Supply

The power supply must deliver a constant output regulated supply. A 230V/0-12V (1mA) transformer is used for this purpose. The primary of the transformer is connected through switch for protection. The secondary is connected to the diodes to convert 12V AC to 12V DC voltage. And filtered by the capacitors, which is further regulated to +5v, by using IC 7805.

B. LCD

The alphanumeric 16character X 2line LCD requires 8data lines and also 3 control signals and they are interfaced to 3664.By using 2 ports, port 0&3 data pins are connected to LCD as data bus. Port0 can be basically used as I/O port i.e. it can be programmed as an input or as an output port.

C. Temperature sensor

LM35 is an accuracy IC temperature sensor with its yield corresponding to the temperature (in oC). The working temperature extend is from - 55°C to 150°C.

D. LDR Sensor

The LDR Sensor Module is utilized to recognize the nearness of light/estimating the force of light. The yield of the module goes high within the sight of light and it turns out to be low without light.

E. DC Motor

Keeping in mind the end goal to control window here we are utilizing brushless DC engine (BLDC). Developing requirement for high efficiency is setting new requests on components associated with electrical engines.

F. Smoke Sensor

The MQ-6 can identify gas fixations somewhere in the range of 200 to 10000ppm. This sensor has a high affectability and quick reaction time.

G. GSM Module

GSM/GPRS module is utilized to set up correspondence between a PC and a GSM-GPRS framework. Worldwide System for Mobile correspondence (GSM) is an engineering utilized for versatile correspondence in the vast majority of the nations. It requires a SIM (Subscriber Identity Module) card simply like cell phones to initiate correspondence with the system.

H. Water sensor

Water sensor is intended for water detection, which can be broadly utilized as a part of detecting rainfall.

I .Arduino uno

The arduino uno is widely used open source microcontroller based on the ATmega328P microcontroller. The board features 14 digital pins and 6 analog pins.

V. EXPERIMENTAL SETUP AND RESULT

All the sensors are connecting to microcontroller though corresponding pins . By using dc motor window gets open and close. Smoke sensor detects smoke means it sends signals to microcontroller then microcontroller makes the corresponding judgment. It controls the dc motor then dc motor performs opening and closing of an window. water sensor detects rain means it sends corresponding signals to microcontroller. Temperature sensor and ldr also works in same way. Whenever smoke sensor detects smoke means though GSM it sends the message to a relative person.

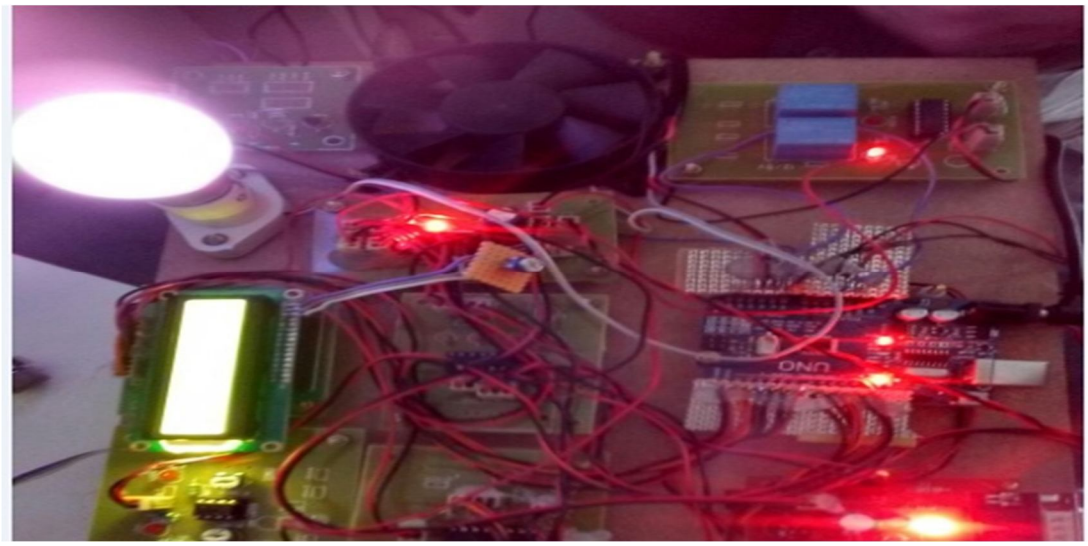


Fig 2: Experimental set up

Fig 3: window opening

fig 4: window closing

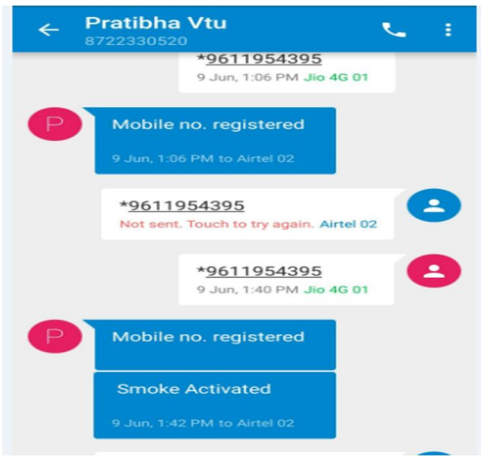


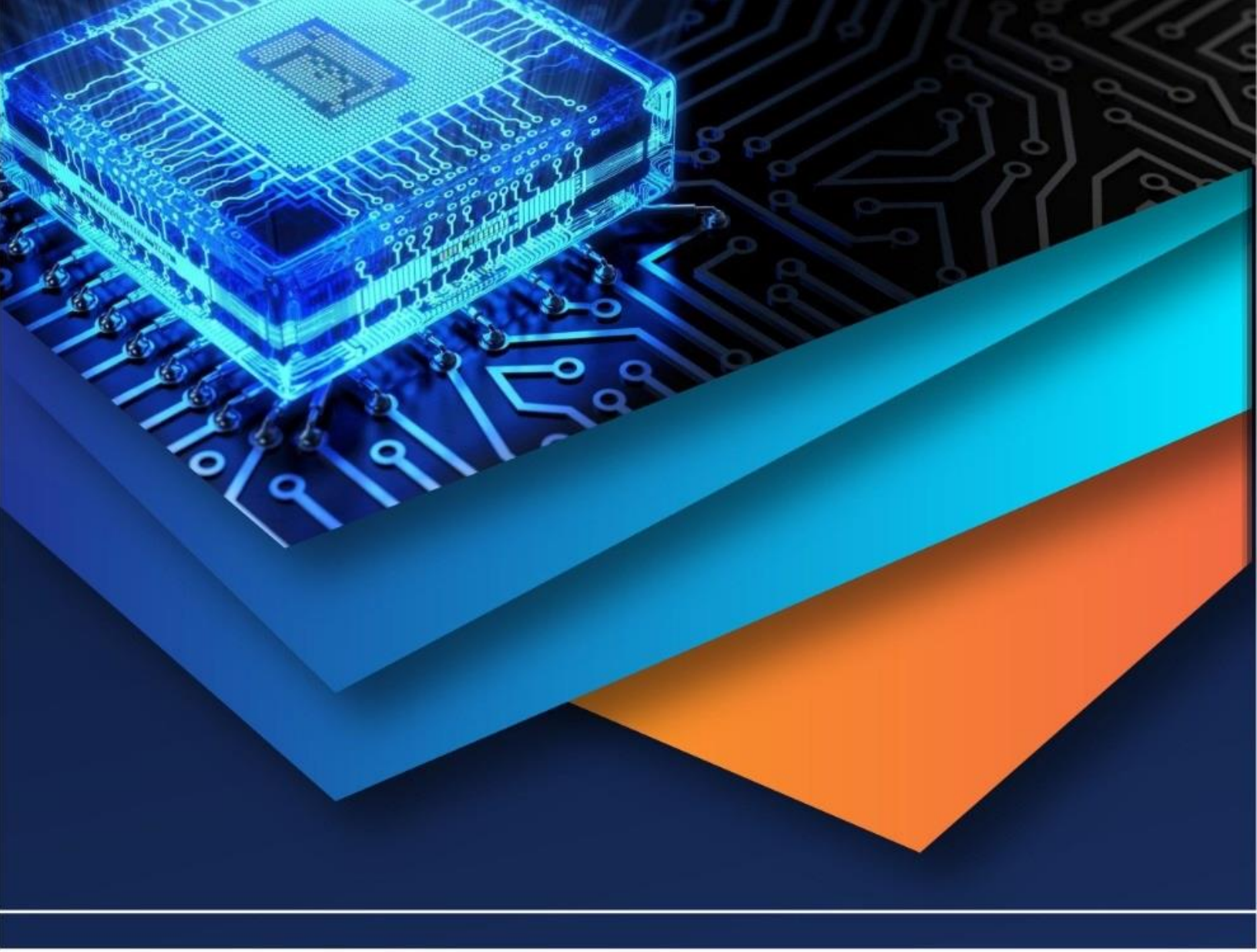
Fig 5: message sent

VI. CONCLUSION

Through the sensor, the windows are naturally controlled opened and shut. There is an enormous hole between test venture look into and the real business, the framework is still in facilitate flawlessness. Alongside the improvement of the GSM, programmed control framework will turn out to be more has the advancement and application prospect. In the mean time, keen window control framework is a critical piece of knowledge family unit, additionally research and impeccable the framework has the imperative central

REFERENCES

[1] GAO Suping, LI Xubin,ZHONG Deyong,CHEN Guixing,” Design and Implementation of Intelligent Window Control System”, Low Voltage Apparatus,vol. 20,pp.8-11,2009.
[2] LI Shengduo,ZHANG Huan,TONG Chunming,GAO Chunfeng,” Design of a Multi-functional Intelligent Window Based on PLC”, Journal of Qingdao Agricultural University(Natural Science,vol.01,2010.
[3] XIE Zuomin,LUO Miaoqing,ZHU Chenliang,HU Gejile,” Design and Research of Intelligent Window” Science & Technology Information,vol.29,201
[4] LI Shuo,JIA Ziqing,ZHANG Mingwei,” Design of intelligent window system based on multisensor”, Electronic Design Engineering,vol.04,2011
[5] ZHANG Fei,HE Yaqin,” Design of Smart-Window Based on micro C/OS- ”, Modern Electronics Technique,vol.07,2008



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY