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Application of Arduino Devices in various IOT Application

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Abstract. In this paper, v segribe the wireless sensor network system is the next open source hardware we've graded or raspberry arduino refers to an open source electronic operating system or board and the software used to program it. Arduino is designed to give electronic devices access to artists, designers, entertainment enthusiasts and those interested in creating interactive objects or contexts. Arduino boards input sensor in light, a finger or twitter message read on a button -and turn it into a release- running a motor, turning on the led, posting anything online. To the microcontroller on board a set of instructions what to do by sending. Little education in this article run the mobile robot complete of systems provides overview. The arduino is easy to use and a greater number named for the sensors. In fact, in every application new skills are added, also this hardware, hardware services i / o bespoke with target, point-to-point relationships for protocols are defined primarily. Voltage is measured using voltage. Separator, because generated by the solar panel voltage for arduino larger than the receiver. Finally, created by the solar panel current sensor current is measured using volume. These parameters are arduino and as the input value for the output the liquid crystal display (LCD) is displayed on the screen. LCD screen temperature, light intensity, shows voltage and current value output. Arduino analog of the parameter the purpose of the input is to quickly convert to digital output, LCD screen displays via arduino, it is one of the most popular microcontrollers one will be used in robotics .different types of arduino there are microcontrollers, they are about design and features not only that, but the size and processing skills also vary. Completely different chips, however there are only two models in use: fixed and mega. Arduino board, this is yours when creating products of the hardware you work with is a part of. Is the arduino IDE software running on your computer? A sketch you upload on the arduino board (a small computer program) create IDE are using. More than a decade with intensive research and development, wireless sensor network for many innovative applications technology a emerges as a viable solution

Keywords: Arduino, Environmental Monitoring, Internet of Things, Data Acquisition, Data Logger

1. Introduction

The name arduino came from a bar in ivria, italy, where some of the founders of the project met. The menu is named after ivria march and the italian king arduino , ivria from 1002 to 1014. The program provides the incentive and opportunity to use these skills. Such as pic microchip and atmel avr direct use of microcontroller chips although very common, the latter is due to the greater flexibility it provides we chose the arduino operating system. The arduino is a good educational tool for students who are not pre-planned in the microcontroller because they are well-equipped with libraries, making it easy for them to various components. Based robots and mixed real and virtual collaboration provided by a team of agents. Finally, the article concludes and ends with future work. So do the following research the question arises: "in the dpl format based module arduino microprocessor students basic design principles in order to help understand can it be used successfully? "the purpose of this articleis to design two basic modules, project ii and design project iii arduino how technology is used and undergraduate engineering students how from its application explain how it can benefit. Artists, diy entertainers, engineering and belonging to non-engineering disciplines people from all walks of life as students. Specific variables in a given context effectively monitor and control this large community uses the arduino site. Arduino exploits on its own contains context, such as java and c / c ++eclipse ide development based on the context, this is flash and processing can be done with some software such as. Can be done with some software such as. That, in turn, reduced the scope of research and application. The project focuses on measuring solar power using arduino. The parameters measured in this design scheme are: light intensity, voltage and current and temperature many uses sensors. The main part of the project is the solar panel, light sensor, temperature sensor, voltage separator, current sensor and LCD screens fossil fuels and coal, global warming and extreme weather are forced into such burning fuels alternative to reduce reliability many countries looking for ways use fossil fuels. Growing all over the world to meet the electricity requirement the most promising currently in use solar energy is renewable is one of the resources.

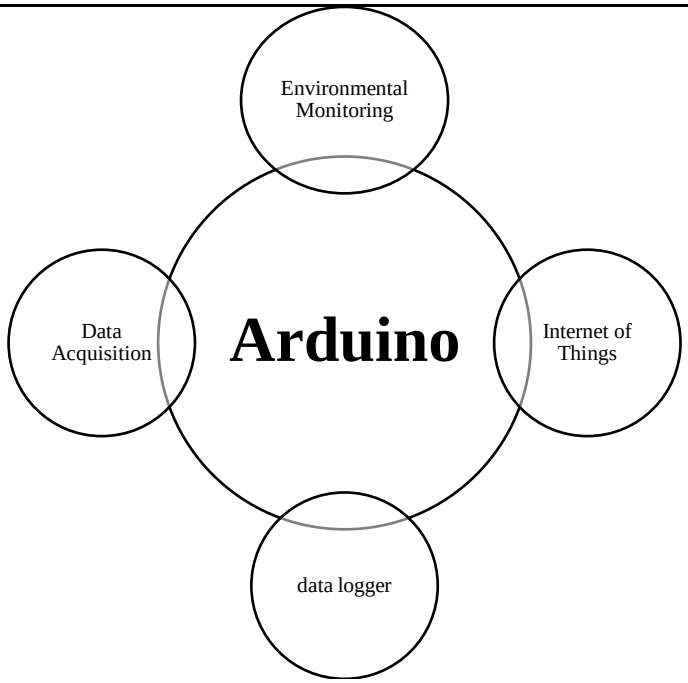

FIGURE 1. Arduino

2. Arduino

It has an introductory button attached to the arduino input and required to support led all. Microcontroller arduino attached in the publication: to get started, usb connect to computer via cable or run on ac-to-dc adapter or battery. Arduino interface microcontroller centered. Arduino uno is a t mega the base is the microcontroller board. This is 14 digital input / output contains needles (these can be used as 6 pwm outputs), analog inputs, 16 mhz ceramic resonator, a usb connector,, a power jack, an icsp title and a reset button. Next up is uno (creative commons licensed under attribution-share a 2.5) is the atmega328 series controlleratmega328 is a series controller. For writing and compiling and more microcontrollers for uploading have an integrated growth environment. It has 14 digital inputs and output pins (among them six pulse band modulation (pwm)) and sensors, switches and with electronic components such as motors six analog inputs are for communication. It has 16 mhz ceramic resonators, a usb connection jack, an external power supply jack, and an icsp plug-in circuit serial programmer)header a reset button, gnt pins(for grounding) and5v pin (5 volt supply)its operating voltage is 5 v and input voltage7 to 12 v (up to 20v).if you use more energy at work its operating voltage is 5 v and the input voltage is 7 to 12 v (up to 20v).more energy in work and life of the office by using can reduce energy consumption. Work and by using more energy in life can reduce office energy consumption. Its operating voltage is 5v and the input voltage is 7 to 12 v (up to 20v) by using more energy in work and life can reduce office energy consumption .the arduino uno is an atmega328 datasheet based microcontroller board. This control module uses the arduino operating system. The arduino uses atmel avr and arm microcontrollers based on an open source software and the hardware base. It includes 14 digital inputs and output pins:6 pins pwm output and 6 pins clock speed 16mhz,ceramic resonator usb connector, power jack, analog input such as icsp header and reset button. Arduino is widely usedopen source single-panel microcontroller development platform, which is flexible,the hardware is easy to useand software components.arduino uno r3 is atmelatmega328 is based on the microcontroller. and clock speed 16 mhz.includes 6 analog inputsand there are 14 digital i / o pins,, which includes 6 analog inputs andthere are 14 digital i / o pins,can be attached to the board. Custom sensor extension board, next-copyalso called a shield. rear arduino uno boardcan be fitted directly on hats.

3. Environmental Monitoring

More than a decade intensive research and with improvements, many innovative wireless sensor for applications network technology a emerges as a viable solution. In this paper, open source hardware sites such as arduino and created by us using raspberry pi we describe the wireless sensor network setup .gateway application and web application command schedule used to share data between. Such a design gateway application and internet use and disconnects from inter-process data, this greatly simplifies the partitioning problem such a design use of the gateway and disconnected from internet use,, inter-process data sharing greatly simplifies the problem. In general, environmental monitoring applications seconds or in order of minutes tolerate delays, hence the magnitude of the delay introduced by such a system will be accepted in our target application situations. Such design is multi-environmental monitoring and be useful in data collection applications. Users local area network or internet access in the sensor data from any of the terminals or to configure the sensor nodes remotely and connect to an internet application to manage large scale that we have created before compared with teo ecosystem 1, computer design provided in this paper small-scale environmental monitoring and is very suitable for data collection application wireless sensor network technologies /software, standardization and commercialization.. Wireless sensor network

layout many hardware to build and development of software components and integration is required .the environmental monitoring wireless sensor network the overall structure of the system. Environment of organic pollutants reliable analytical tools are needed to assess the impact, so they are kind of low devices that are quickly screened with handling. The most selective for hydrocarbons, search for sensitive, low-cost, stable and robust sensors this topic is part of the interest reflected by many publications .to detect hydrocarbons in gaseous and liquid states this report examines some of the work that can be done using sensors analytical capabilities of different sensors their choice, sensitivity and in terms of detection range are compared and discussed.

4. Internet of Things

FIGURE 2. Internet of Things (IOT)

Is the "internet of things" (IOT) communicate things, allow to connect to each other is technology. This is called the internet of things (IOT) businesses connected via the internet in both industry and agriculture methods in and making millions of devices highly efficient with processes. IOT smart home, smart city, smart transport and such as smart farming integrates many new intellectual concepts(radio-frequency identification-rfid-tags, sensors, drivers, mobile phones, etc.)Through personal address programs common in contact with each other collaborate to achieve the characters but in many cases these solutions are simple, resource-limited micro-controllers requires more computational resources than. Surprisingly ,despite the basics of complex hardware-software systems, interconnected micro-controllers on the internet to expand the basic capabilities of micro-controllers, simple to integrate and there does not seem to be a flexible was complete the projects in the book you can choose any arduino board, this book is available on the internet since it is about things, internet connection is an important requirement, also any arduino board you have even if you decide to use, does it support any internet make sure. For starters, the arduino uno is comparable to the arduino uno might be a bit. Complicated, but it is built-in features ethernet and has wireless capabilities. Comes with so you have extra no shield want to it. Internet or other communication other devices through networks and connected with systems and data transfer software and other technologies.

5. Data Acquisition

To the physics laboratory, data from some companies for acquisition provides equipment, however, many sessions active of students includes participation, because we are acquiring data from arduino and can be used as a control system. Students are some of the arduino code i was able to replace and check the lock results. However, many sessions are for students includes active participation, because we have data acquisition for arduino and can be used as a control system. Students set some parameters in the arduino code the converter was able to verify the results used in this article very expensive for arduino component data analysis software, excel interface, this is a free parallax data acquisition tool (plx-daq) using software microsoft excel software lets access. Arduino microcontroller and some cheap sensors for expensive data acquisition tools can be used as a cheap alternative. Used in this article very expensive component data analysis is software. Acquisition of atta for physics the tool can be very expensive. Alternatively, the cheaper arduino data can be retrieved using a microcontroller .used in a physics lab, arduino software for wireless communications there data is obtained using, this will allow the sensors to acquire central data extra wires to connect to the system by avoiding use reduces setup time and labor costs. Also, connecting wireless data transfer collect all the data at one end depending on the ability to store them on the computer. After that, the precise national instrument using a data acquisition card arduino based data we discuss calibrating the locker the main feature of the software layer is linux configured on top of the operating system volition is the operating system and data recovery, data analysis and is written in python to enable monitoring analysis for small PV installations monitoring is used gradually .for solar radiation monitoring for designing low cost hardware this is one of the first attempts, it is then micro and developed for environmental monitoring. Microcontroller gaps in low-power mode between power consumption are reduced by holding, rechargeable battery data powered by due to the acquisition system. Weather in remote stations or environmental parameters this system for monitoring very relevant, more signal conditioning and data recovery

sample speed and filtration determine the accuracy of the system the other important point when. Once set up, the operator or data without computer intervention can be measured, recorded and displayed.

6. Data Logger

Integrated circuit microcontrollers (ICMS) a strong, create low cost data locker offer customizable site .most recently, the arduino microcontroller user of the operating system ICM released as a friendly version, especially electronic or programming arduino basic data is small in the registry or designed for those without a background .but the design is not completely immersed. New low price the portable data locker is hardware in this section and both software covers, however, data loggers are commonly known these are called data collection devices, requires special software (increased cost and additional specific skills),and always mains or must be connected to a pc. First, regular data lockers, accuracy. These issues and limitations low cost and technical capabilities, low cost and flexible monitor PV systems in design of the new data locker with capabilities and led to improvement. A low cost data recorder, as mentioned earlier, serves for various basic purposes, e.g., by free hardware and software supported by its design accessible to all.. This public access is quick and contributes to continuous growth in addition, for each specific event (research in developed and emerging areas and industrial applications) new data locker design for PV monitoring due to the flexibility to adapt. Tracked by arduino data locker the two reference cells (nodes) are similar in calibration where the calibration of the cells is complete scheduled for trial period as well. In addition, for each specific ever (in developed and growing areas research and industrial applications) new data locker design for PV monitoring due to the flexibility to adapt. Tracked by arduino data locker data are two reference cells like (node) calibration, calibration of cells there scheduled for the entire trial period? The data used is filtered, rejects radiation less than 800 w / m2and reduces uncertainty sources after the summer storm because there are some issues with the connectors cell 1 matching is bad .go to link 1 with data locker by carefully reviewing these issues were resolved. Of severe environmental conditions low price data lockers under and the behavior of the sensors and after proving good accuracy,, key in many PV systems the next purpose is to monitor the parameters.165 data locker is an internal microprocessor, data storage and one or more sensors or a small, battery-powered device with sensor ports data lockers in many situations can be used and go unnoticed is a data recorder a built-in device or electronic device ,is it a sensor or not external tools and data time by sensors or registers at the location.. Growing but not fully, they are digital processor based on and they are called digital data loggers.

7. Conclusion

By creating a ros drive arduino -based robot operating systems solution for integrating robotic operating systems based on ros this paper provides. Operating system ros integrated with middleware, code to reduce growth time through reuse, using a wide range of tools it shows the best results. In all installed periods series of research on the arduino based on the theme, however it is still is a field of study .is still unstable at the scientific level because of the themes of different eras the research department was not established due to lack of contacts so, the scientific community strong in this field and does not have consistent research, and currently in practice can determine what exists .in general, for this system designed system energy saving, cost reduction ,for security improvement and future systems focuses on easy maintenance. This is the office lighting system and initial verification of the overall functionality of the hardware and completes the possibility .the software was also realized .future office intelligent control for field study and industrial processing of lamps this system is very important the reference value will also be. Microcontroller open the original arduino integrated development environment (IDE) was designed, this is the code in languages like c makes writing easier, program upload on arduino mega and test it. Arduino mega for this project we used it as a microcontroller ,cheap and though you can use a small arduino uno.in this paper, device and equipment automation ,heating facility control and energy management arduino microcontroller with integration capability highly scalable, based on, low cost and versatile housing we provide automation system. Finally, of these two modules dramatic increase in pass rates, arduino microprocessor design can be used successfully in the module indicates, thus students basic design can understand the principles.. Students' programming and problem solving skills and improved design skills audits are the work of students helped to develop thinking. Finally, of these two modules dramatic increase in pass rates, arduino microprocessor design can be used successfully in the module indicates , through this the students get the basic design can understand the principles . Arduino , raspberry pi, xbee and more designed with network system open source software packages.

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