

GESTURE AUTOMATION

Home automation through hand gesture

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ABSTRACT—

This paper is about how to control any device through the human interaction with the system that is build. In today's world this automation plays an important role in industries, household, research, etc. This is interconnected with the changes according with the human actions as well as through self-control of the system. During this process man tries to update and upgrade their skills. Automation is one such thing that grows drastically making things easier for humans. Consider the case before the age of internet people use to travel miles just to pass a piece of information, but with internet these difficulties had no scope in present world. Further this can be helpful in correcting human mistakes and obtain more accurate results. Further it is of a great help in obtaining information where it is difficult to reach some places, such as the analysis of climate on other planets. Added it also help in overcoming the human disabilities.

The main aim of this paper is to make human life robust using the hand gestures to control the home appliances and this can also help in progressing with other device operation. Moreover this would be of a great help to disabled people who can't move from place to place.

KEYWORDS- *Arduino, flex sensors, wireless connection, automation, NRF24L01.*

I. INTRODUCTION

This paper is aimed at obtaining more efficient system for humans and ease their work. As we all know the present day automation plays a key role in global economy and in our lives. Automation also know widely as "Internet of Things" which is going to be the next disruption. In this process various devices are interconnected through various types of networks and provide us with seamless control over the aspects. Setting up to timing and rest of the work is dependent on the human needs thus providing convince, control, money, saving, etc. to provide a smart world. Physically challenged people who suffer from quadriplegia (who cannot move their limbs) can access the system through the gestures of their hand figures. Finally it's how humans

grow and discover new technological upgrades for efficient future.

II. ELEMENTAL DEFINITIONS

A. WIRELESS COMMUNICATION

Communication that is obtained through a guided medium to attain proper communication. It does not require any physical medium but the signal propagates through space to attain connection. Some of these communications are Zig-bee, Wi-Fi, Bluetooth, GPS receivers, etc.

B. SENSOR

A device that detects the type of input from physical environment in the form of heat, light, moisture, pressure, etc. and converts in to electrical signal. Different types of sensors are temperature, IR sensor, touch sensor, etc.

C. ACTUATOR

It is a component of electro-mechanical devices that provide controlled movements which are operated electrically or manually to obtain output such as linear actuator, rotary actuator, pneumatic actuator, etc.

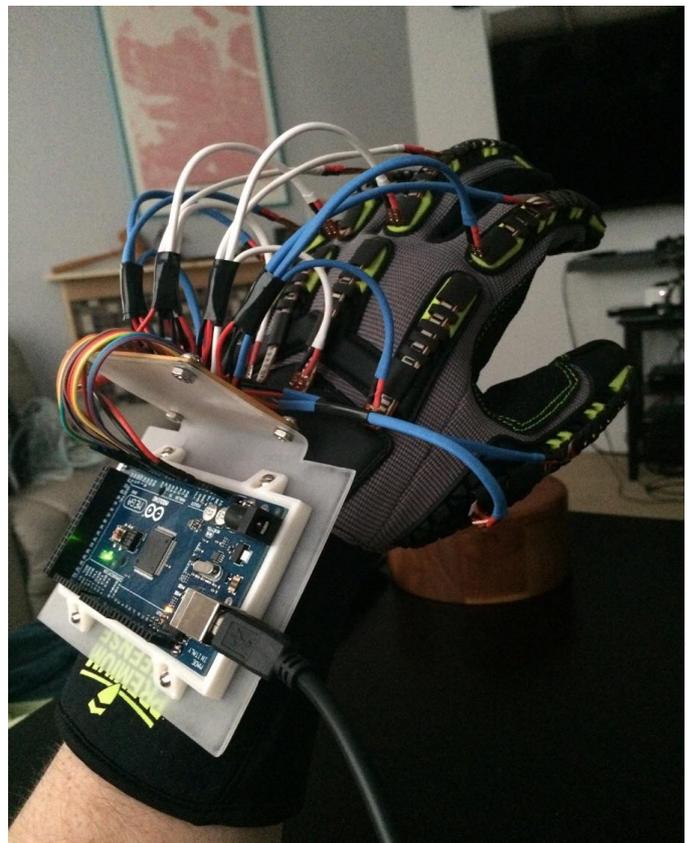
III. COMPONENTS

- Arduino UNO
- Flex sensor
- Male to male jumpers
- Female to male jumpers
- NRF24L01
- NRF24L01 Adapter
- Glove
- 9V Battery
- Hot glue gun
- Breadboard
- Aluminum foil
- Connecting cable

IV. PROCEDURE

The connection establishment place a key role in functioning of this model, where nrf24l01 is used to make up a wireless connection between the two arduino boards. Where in these two arduino boards play a main role in processing the information and give out the output in controlled way. Later the connections are made using the M to M jumpers and F to F jumpers with the arduino board and the nrf24l01 module with the help of nrf24l01 adapter. The flex sensors are used to track the hand gesture movements and thus they convert the motion to electrical input to the arduino board. These flex sensor can be made by using the jumpers and an aluminum foil and a lead shaded sheet to provide resistance. Flex sensors are prepared using aluminum foil and jumper with change in the resistance of the lead shaded paper.

After following the above steps then let us take a sample home appliances case such a light or fan where we can show case as an example in our prototype. And making the considerable connections thus building the whole system is ready where the flex sensors are attached to glove thus to make efficient use of movements.



V. OUTPUT FIGURES

Movement capture by the hands help in obtaining a particular output according to the device automated. This change in out can be observed in the figures below.

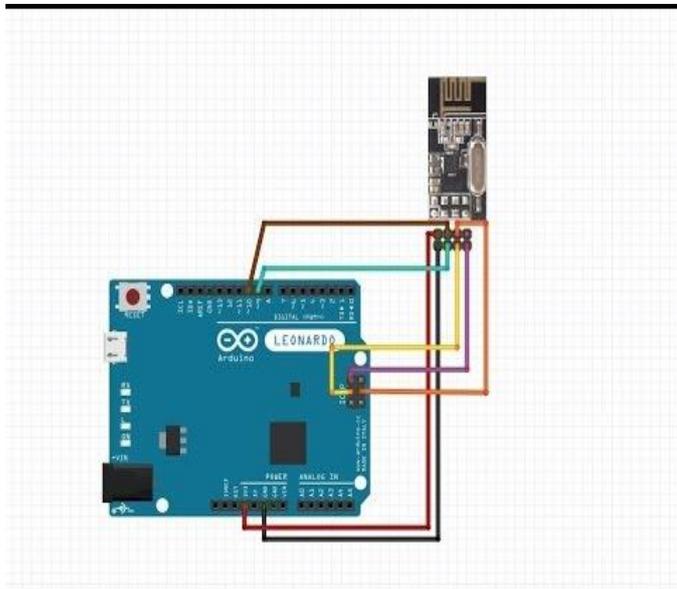


Fig. 1. Connection of arduino with nrf24l01 module

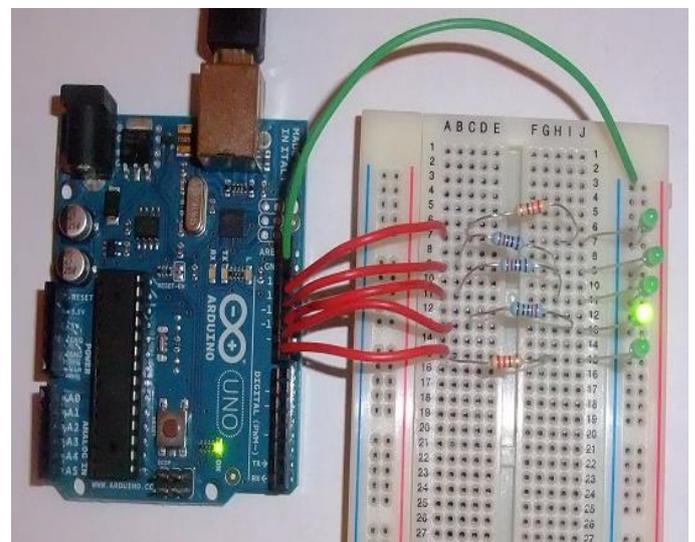


Fig. 2. Output of leds glowing

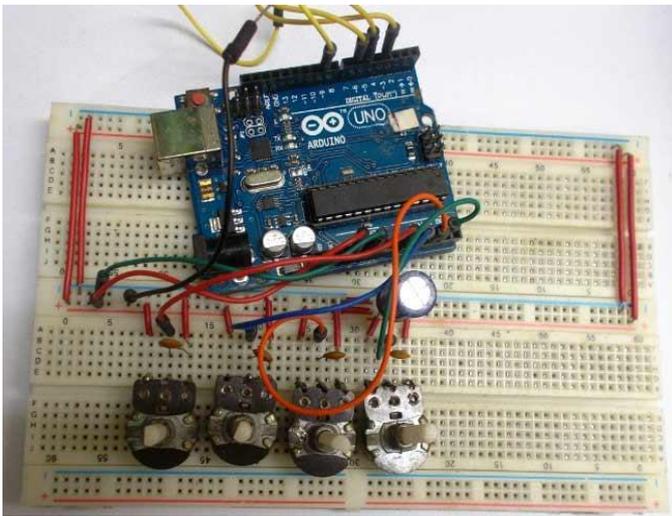


Fig. 3. Out of fan system rotating

VI. CONCLUSION

The smart home system will improve in virtualization and dynamic authentication concepts. Thus

resulting in reduced number of hardware wastage and human effort to switch the load status and IR commands, also ensuring security authentication, other than parental control.

VII. FUTURE ENHANCEMENTS

Features such as voice recognition can be added to this paper to make it more better and easy way to control the devices. Moreover this development enhances the system to be used in wide range of areas. It can be done by using sensors for improving the atomicity and easy control over things.

VIII. REFERANCES

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