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HAND CONTROL ROBOT

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ABSTRACT- Mobile and wearable devices are continuously optimized towards a small outline. At the same time the number of functions in these devices continuous to increase. While this development is clearly beneficial for the ubiquity of mobile and wearable systems, e.g. for using the systems during daily activities, it hampers interaction. sensors play a major role in the µIMU due to their low-cost and miniaturized size. We use accelerometer sensors to measure the 3D accelerations and 3D angular rates. A Micro Control Unit (MCU) performs coordinate transformations and filtering calculations. In particular, our goal was to demonstrate that Accelerometers can be used to effectively translate finger and hand gestures into computer interpreted signals. To this end we developed the Acceleration Sensing Glove (ASG) that helps deaf and dumb to communicate with others through voice commands. In this project, we are measuring the actions performed on sign languages in to an equal acceleration values. The acceleration values are measured in 3 axis, using a 3-axis Accelerometer.

KEYWORDS:ARDUINO,RF TRANSMITTER, RF RECEIVER, MICROCONTROLLER, GESTURE RECOGNITION TECHNOLOGY.

1. INTRODUCTION

Gesture recognition technology is used to control the robotic arm. Gesture recognition enables humans to communicate with the machine and interact naturally without any mechanical devices. Gesture recognition is a topic in computer science and language technology with the goal of interpreting human gestures via mathematical algorithms. Gestures can originate from any physical motion or state but commonly originate from the face or hand. Gesture recognition enables human to communicate with the machine and interact without any mechanical devices. Hand gestures are extensively used for robotic control applications and robotic systems can be controlled naturally and intuitively with such robotic communication Gesture recognition technology is used to control the robotic arm. Gesture recognition enables humans to communicate with the machine and interact naturally without any mechanical devices.

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2. ARDUINO

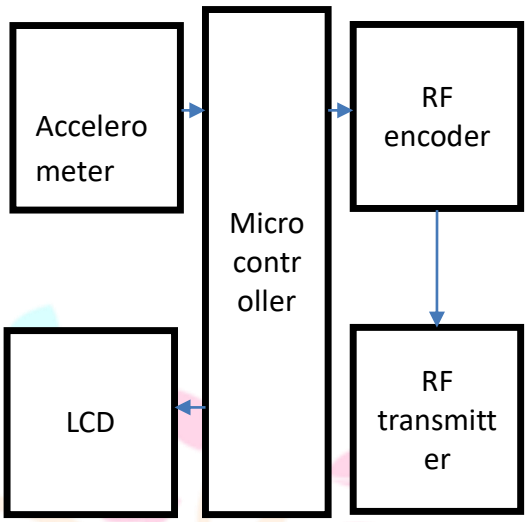
Arduino is an open-source computer hardware and software company, project and user community that designs and manufactures microcontroller-based kits for building digital devices and interactive objects that can sense and control objects in the physical world.

The project is based on microcontroller board designs, manufactured by several vendors, using various microcontrollers. These systems provide sets of digital and analog I/O pins that can be interfaced to various expansion boards ("shields") and other circuits. The boards feature serial communications interfaces, including USB on some models, for loading programs from personal computers. For programming the microcontrollers, the Arduino project provides an integrated development environment (IDE) based on the Processing project, which includes support for the C and C++ programming languages.

The first Arduino was introduced in 2005, aiming to provide an inexpensive and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common examples of such devices intended for beginner hobbyists include simple robots, thermostats, and motion detectors.

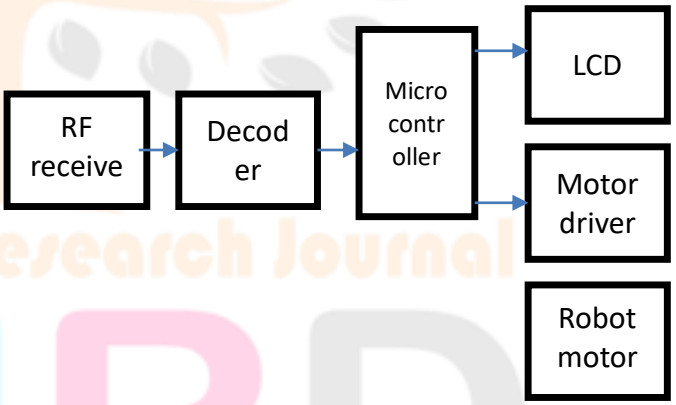
Arduino boards are available commercially in preassembled form, or as do-it-yourself kits. The hardware design specifications are openly available, allowing the Arduino boards to be manufactured by anyone.

3. BLOCK DIAGRAM



Transmitter

Receiver



4. BLOCK DIAGRAM DESCRIPTION

Initially, the microcontroller sends signal to the RF module and if the RF module is connected properly with the microcontroller it sends an acknowledgement signal back to the microcontroller. Then, if there is any changes detected by the sensor unit. After the sensor unit detects the acceleration , it sends the signal to the microcontroller with the help of ADC. Voltage regulation device is used to regulate the voltage. After that the microcontroller receive the signal, send by acceleration sensor then it sends activation signal to other external devices connected with Motor driver and DC Motor[forward, reverse, Left, Right Position]. The RF module gets activated

which sends a information to Android Phone. At the end, the robot movement is successfully found then with the help of reset button the whole system is made to reach its initial stage.

5. CONCLUSION

The project "**Hand Controlled Robot**" has been completed successfully and the output results are verified. The results are in line with the expected output. The project has been checked with both software and hardware testing tools. In this work "**power supply, microcontroller, RF module, Motor driver, DC Motor and voltage regulation**" are chosen are proved to be more appropriate for the intended application. The project is having enough avenues for future enhancement. The project is a prototype model that fulfills all the logical requirements. The project with minimal improvements can be directly applicable for real time applications. The project is further adaptive towards continuous performance and peripheral up gradations. This work can be applied to variety of industrial and commercial applications.

References:

[1] Amidi, O. (2019), "Integrated Path tracking Robot Control", Carnegie Mellon Univ. Robotics Institute, Technical Report CMU-RI-TR-90-17, Pittsburgh, Pennsylvania, (USA).

[2] Arrebola, F., Bandera, A., Camacho, P. and Sandoval, F. (2019), "Corner detection by local histograms of contour chain code", Electronics Letters, Vol. 33, No 21, pp. 1769-1771.

[3] Hong, T., Narayanan, K. A., Peleg, A., Rosenfeld, A. and Silberberg, T. (2019), "Image Smoothing and Segmentation by Multirresolution Pixel Linking: Further Experiments and Extensions", IEEE Trans. on Systems, Man and Cybernetic, Vol. 12, No 5, pp. 611-622.

[4] Moravec, H. P. (2019),"The Stanford Cart and the CMU Rover", Autonomous Robot Vehicles, I. J. Cox and G. T. Wilfong, Ed. Springer-Verlag.

[5] Nomad 200 Path tracking Robot Simulator Language Manual, Nomad Host Software Development Environment, Release 2.1, Nomadic Technolaogies, Inc., Mountain View, CA.-2019

[6] Nomad 200 Path tracking Robot User's Guide, Nomadic Technologies, Inc., Mountain View, CA. -2020

[7] Ollero, A., García-Cerezo, A. and Martínez, J. L. (2019), "Fuzzy Supervisory Path Tracking of Path tracking Robots". Control Engineering Practice, Vol. 2, No. 2, pp. 313-319.

[8] Rombaut, M., Segovia, A., Meizel, D. and Preciado, A. (2018), "Displacement of a Path tracking Robot in a Known Environment", IMACS-MTCS Symposium, Villeneuve d'Ascq (France).

[9] Shin, D. H., Singh, S. and Whittaker, W. (2018), "Path Generation for a Robot Vehicle Using Composite Clothoid Segments", SICICA'92 IFAC Symposium, Málaga (Spain), pp. 533-538.

[10] Sordalen, O. J. and Canudas de Wit, C. (2019), "Exponential Control for Path tracking Robot: Extension to Path Following", IEEE Int. Conf. on Robotics and Automation, Nice (France), pp. 2158-2163. [11] Urdiales, C., Bandera, A., Arrebola, F. and Sandoval, F. (1998), "Multi-Level Path Planning Algorithm for Autonomous Robots", Electronics Letters, Vol. 34, No. 2, pp. 223-224.