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FARMER FRIENDLY AGRI-BOT USING ARDUINO

Ms. HEMAVATHI BURUGULA, Assistant Professor,Department Of ECE, SICET, Hyderabad

Nagapuri Kavya, Veerabathini Rahul, Lokasani Rahul Reddy, Chinthala Vivekananda

Department Of ECE, SICET, Hyderabad

Abstract:

The article describes the power of MEMSbasedmotioncontrolled robots, which are robots that can be co ntrolled with three gestures instead of traditional keyboards or keyboards.There is an opportunity to crea te robots that can properly interact with humans in the future. Therefore, our target interest is gestural int erfaces based on gestures. A new gesture recognition model was developed to identify unique action signals produced by hand movements. MEMS sensorsare used to do this and ultrasonic sensors are also used for reliable work. To meet our requirements, a program was written and executed using am icrocontrollersystem. The test results prove that ourguidance model is very good, while at the same time improving the natural intelligence method, it is also assembled in a simplehardware circuit.

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I. Introduction

Technology is a word coined for the practical application of business knowledge. Education is illegal unl ess it serves the purpose of its users. Today, technology is used to complete different tasks in almost eve ry industry. The whole society is dependent on science and technology. Technology plays an important r ole in improving the quality of life. One way to achieve this is to use complex logic to facilitate multitas king. Gesture recognition has always been a research topic of great interest to many scientific communiti es, such as humancomputer interaction and image processing. The increase in humancomputer interactio n in our daily lives makes the user's connection technology increasingly important. ody movements base d on intuitive presentation will be very easy to interact with the process and will help people control com puters or production machines normally. Nowadays, robots are controlled by remote control, mobile pho ne or direct connection. If we consider the price and the equipment needed, all this adds complexity, esp ecially for lowend applications. For example, in telerobotics, slave robots have been shown to follow the movements of their distant masters [1].Motioncontrolled robots are widely used in nonverbal human co mmunication. They allow commands (e.g. "stop"), emotions (e.g. "win" hand gesture) to be shown, or so me simple words (e.g. "two") to be sent. They can also be the only means of communication in some sit uations, such as the joint work of deaf people (sign language) and police, regular facial expressions and gesture information in the absence of light qualityRobots have become important in warfare because the y can be armed and sent to dangerous locations to perform important tasks. In secret or dangerous operat ions, it is impossible to control a robot using conventional methods. Wireless data gloves are specially

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designed for communication in the cloud environment, where typing on the keyboard is useless or impo ssible. This article describes the development of these communication gloves to send instructions to rob ot soldiers to control their operations. New robotic remote control has become a field of science and tech nology, especially in the last decade. For example, a wearable wireless remote control has been develope d to control robots with different types of screens. Remote controlled robots are used in environments th at are dangerous for humans.Gestures are used to control the flying manta ray model. A glove is used to control the wheelchair using robotics. Other applications of gesture recognition include character recogn ition in 3D space using inertial sensors [2], [3], gesture recognition for TV remote control [4], using han ds as 3D mice [5], and using gestures as controls. Virtual reality techniques [6] can also be used to enha nce interaction between two people. In our study, a recognitionbased micro MEMS accelerometer that c an recognize eight movements in 3D space was designed. The system has many uses, such as acting as a voice channel for people with speech disabilities. Lack of good lighting, slow motion, etc. overcome li mitations

response and visualization methods [9] In order to collect/process large data and balance the accuracy of data acquisition and equipment, a microinertial testing unit was used in this project to analyze the speed of hand movement in three dimensions. The proposed recognition system is based on MEMS accelerati on sensors. Since using gyroscopes for inertial measurement imposes a heavy burden [10], our current s ystem relies only on MEMS accelerometers and does not use gyroscopes for hearing. Figure 1 shows the system architecture of the proposed MEMS accelerometer-
based gesture recognition system. Details of each step are described below.

II. Design Model A. Software Design Module

User instructions for functional purposes are written in c code. The application is compiled using the KE IL- compiler and the original file is converted to.hex file. We use a micro flash memory programmer for disposal purposes. This logic is dumped into the ROM storage area of the microcontroller. The µVision3 screen provides us with a menu for the spoken word, a tool for selecting quick buttons, and a window fo r information, dialog boxes, and information display. µVision3 allows us to open and view multiple raw files simultaneously.The project contains enough information to retrieve the raw data and generate the c orrect binary code that must be executed by the application. Because the device requires a high level of f lexibility, there are many ways to configure the device to work in a certain way. It will be very difficult t o set these options every time you create an application; therefore they are stored in the project file. Loa ding data into KEIL tells KEIL what raw data is needed, where it is located, and how to manipulate the d evice. KEIL users are "project" centric. The project is a list of all the basic documentation needed to crea te an application, all selected tools that specify how to build the application, and (if necessary) how to si mulate the application. The project can be saved to save space. The project will restart, the simulator or debugger will start and all windows will open. The extension of the KEIL file is .

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B. Hardware Design Module

If a machine is needed to control the chair without physical contact. Therefore, gestures are our choice t o achieve this important goal. Gestures are nonverbal andsimple body movements. Sensors that use mov ements as input may work. Energy is about energy. A device or system that provides electrical or other t ype of power to an output or set of loads is called a power supply unit or PSU. The term is generally use d for electronic equipment, less frequently for energy equipment, and less frequently for other electrical equipment. The MMA7361L is a lowpower, lowcapacity, micromachined accelerometer with cold signa l, 1pole lowpass filter, temperature compensation, selfmeasurement, 0gLength detecting white arc lines. drop and Select allows choosing between 2 options. Very sensitive. Zero G offset and sensitivity are fact ory set, no external components required. The MMA7361L has a sleep mode that makes it ideal for elect ronic devicesRF modules, as the name suggests, work with radio frequency. The corresponding frequenc y varies between 30 kHz and 300 GHz. In this RF system digital data is represented as a variable in the g eneral input. This change is called amplitude shift keying (ASK). RF transmission is preferred to IR (infr ared) for several reasons. First, signals transmitted via radio frequency can be sent over longer distances, making them suitable for long-distance use. Additionally, although infrared operates mostly in line-of-sight, RF signals can be emitted even when there is interference between the transmitter and receiver. Se cond, RF transmission is stronger and more reliable than infrared transmission. Radio communication us es specific frequencies, unlike infrared signals transmitted by other sources of infrared emissions. The H T 12E encoder IC is a CMOS LSI series for remote control applications. They can encode 12-bit data, including N address bits and 1N data bits. If connected, all addresses/data inputs can be progra mmed externally. HT 12D IC is a CMOS LSI series for remote control applications. These integrated ele ments are integrated with each other. For correct operation, an encoder/decoder pair with the same addre ss number and data format must be selected. The decoder receives the address and data from the corresp onding decoder sent by the carrier using the radio frequency transmission medium and sends the output t o the output pin after processing the information. The L293 and L293D are quad high current quasi-H drivers. The L293 is designed to provide up to 1A bidirectional drive current over a voltage range of 4 .5V to 36V. The L293D is designed to provide up to 600 mA of bidirectional drive current over the volta ge range of 4.5V to 36V. Both devices are designed to drive inductive loads such as relays, solenoids, D C and bipolar stepper motors, and other high voltage loads. Current/high voltage loads on good equipme nt.GSM modem is a wireless modem used in GSM wireless networks. Wireless modems act like dial-up modems. The main difference between them is that dial-up modems send and receive data over phone lines, while wireless modems send and receive data over r adio waves.Transmitting part: The above diagram means that the transmission has an accelerometer and its output is in continuous form because the encoder can only understand digital data and we use a comp arator to convert analog data into digital data and this data will be in continuous form. Therefore, we use radio transmitters to send serial data which is replaced by data in parallel by an encoder.

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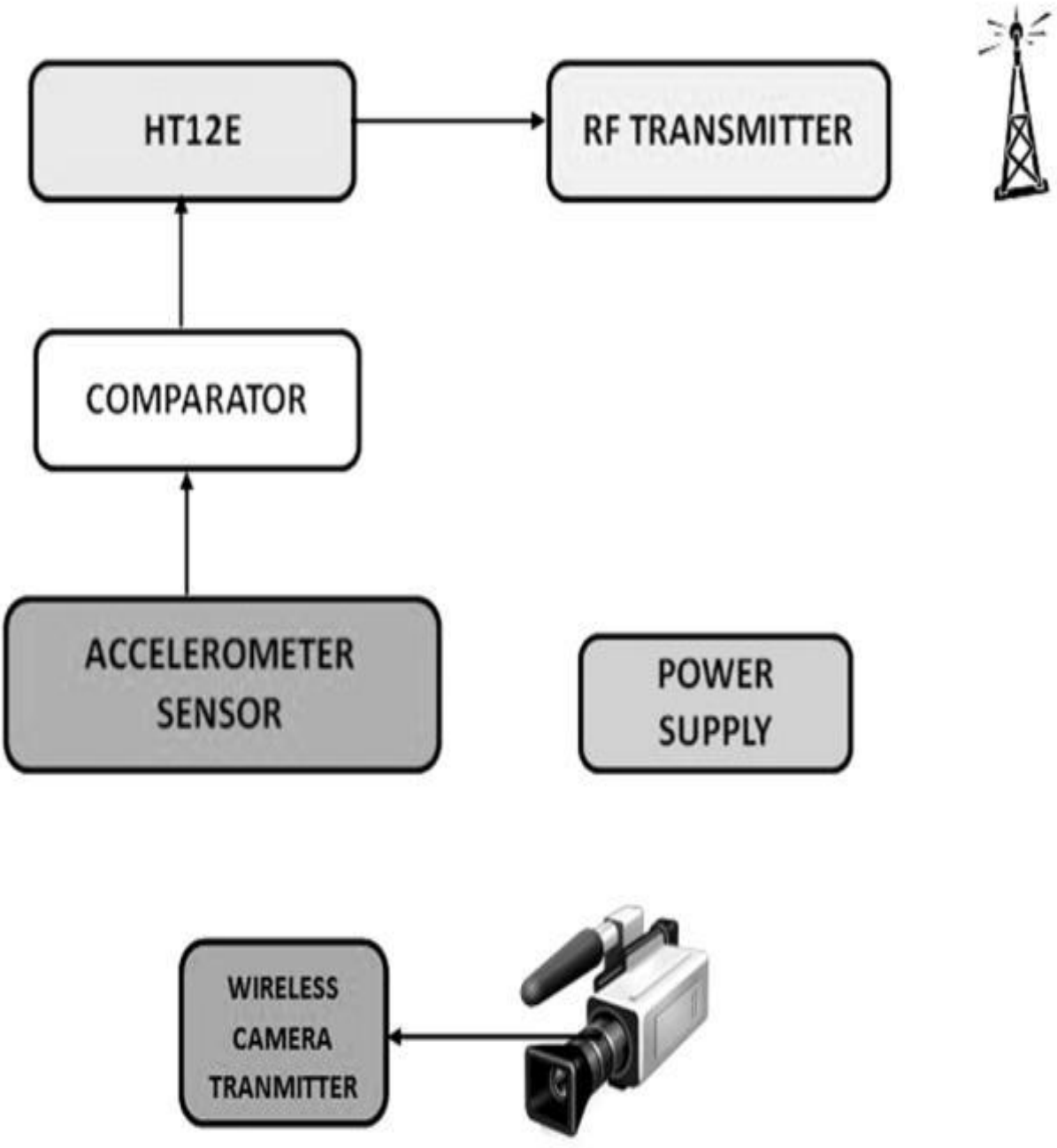

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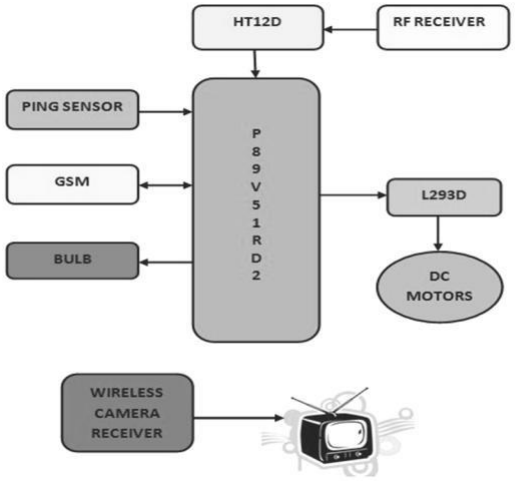
Receiving part: The receiver block diagram above represents the receiving part, the data sent by the transmitter is received by the RF receiver. Serial data is used as input to the decoder, th e decoder converts the serial data into parallel data and gives it as output. As input to RF rece iver. The microcontroller has preprograms to complete our work, based on the received data t he controller will turn on the LED, buzzer, etc. It generates some signals to the motor to start it. The purpose of the motor driver here is to drive the motor and there is the LED and buzzer here. A buzzer sound is used for some special instructions. Use different types of modules, su ch as ping module, GSM module. The ultrasonic sensor output signal is fed to the microcontr oller where an appropriate embedded "C" algorithm is programmed to indicate the presence o f a problem. The GSM mode here includes a SIM card for the Tran receiver that allows the co ntroller to operate and includes a light that represents the bomb.



Test results

For example, in a safe environment, many systems require the operator to remove all hands fr om the control unit before the control unit starts operating. Instead of asking employees to mo ve their hand towards a specific switch, why not ask them to raise their hand using a motion s ensor? This type of management can increase efficiency, reduce the impact of duplication, an d increase security. The advanced robotic arm is designed to resemble a human hand and can be easily controlled using hand gestures. The control arm wears a sensor glove, and the roboti c arm will act as a motion controller. Advanced robotic arms like these can handle complex a nd dangerous tasks with ease. Applications in construction, waste disposal, medicine.

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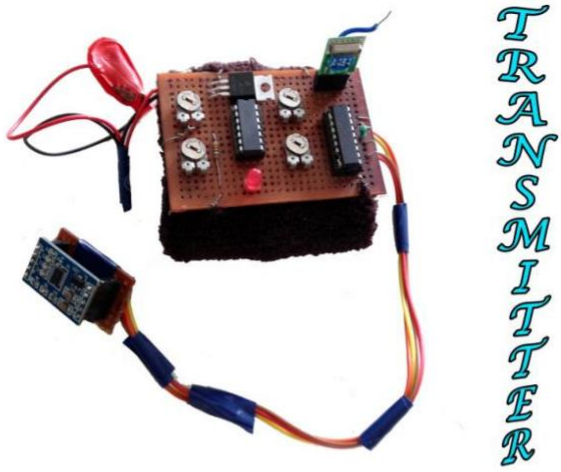

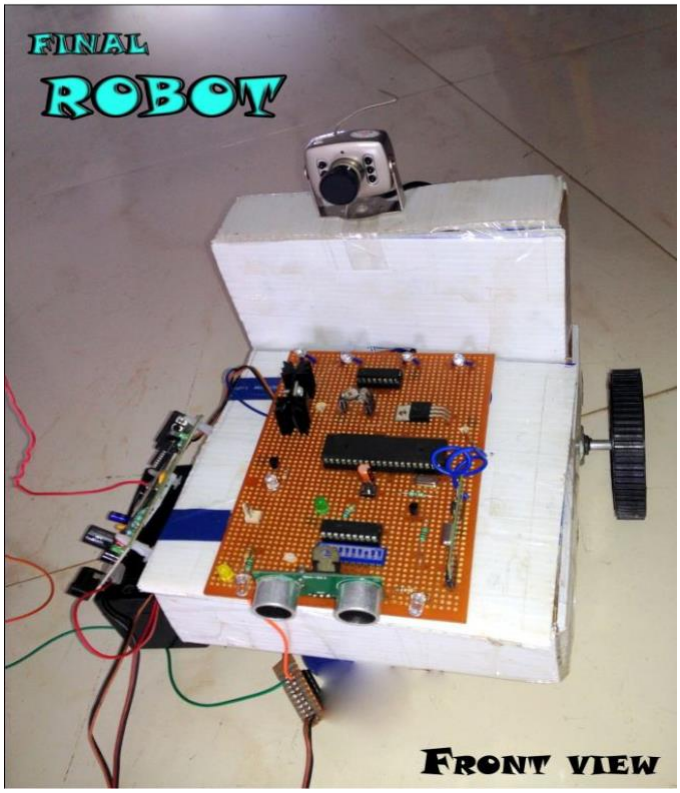

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Conclusion

We proposed a fast and simple movement algorithm for robot control. We demonstrated the e ffectiveness of the calculation on real images we received. In our selfcontrol movement, we o nly consider certain aspects. Our algorithms can be extended in many ways to recognize a var iety of gestures. The gesture recognition feature of our algorithm is very simple and needs to be improved if thetechnology is to be used as a challenging action action. Improving the perf ormance of gesture recognition technology in a general setting requires addressing occlusions , body tracking for functional recognition, and 3D hand modeling, which is beyond current te chnology.