

## Telematics Robotics

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**Abstract---** There are different types of robots which reduces human efforts used in daily life. But our topic "TELEMATICS ROBOTICS" is different from others because it has hands which can be operated from a far off place or in region where toxic substances are used in industries. So, we are not making the full body of robot, but only its arm. It's one arm is used at transmitter side and other at receiver. Whatever signals are transmitted by the transmitter arm is received by the receiver arm. The communication between transmitter and receiver arm is wireless. Both the arms are made of different materials. Transmitter arm is made of leather whereas receiver arm is of cardboard or mechanical hand. The components used at transmitter side are flex sensors, ADC 0808 as analog to digital converter and microcontroller IC P89V51RD2 and on receiver side 5 servo motors and LCD (16x2) connected with controller IC.

**Keywords:** Robotic arm, Flex sensor, ADC ,Servo motor, LCD, Telematics Robotics.

### I. INTRODUCTION

Robot is a machine to execute different task repeatedly with high precision. Thereby many functions like collecting information and studies about the hazardous sites which is too risky to send human inside. Robots are used to reduce the human interference nearly 50 percent. Robots are used in different types like firefighting robot, metal detecting robot, etc.

The first robotic arm to be used in an automobile industry was "UNIMATE" in GM motors USA in 1950s. From then there has been tremendous improvement in the research and development in robotics. Now robots are an integral part of almost all industries. Robots have to do different tasks including welding, trimming, picking and placing etc. These robots are controlled in different ways like keypads, voice control, etc.

In this paper, we introduce wireless communication based control of the robotic arm. A transmitter is designed to input the coordinates of object in the real time environment. To select the real time object, the corresponding coordinate is inputted. The action of picking or placing is also given through the LCD panel. Once the robot gets the coordinates, it uses the inverse kinematics to calculate the required rotation.

### II. WORKING STEPS FOR TELEMATICS ROBOTICS

Techniques can be divided into following categories

- 1) Transmitting of human hand action
- 2) Sensing of action by a flex sensor
- 3) Receiving of signal on LCD screen
- 4) Action performed by mechanical hand

The technique of sensing of signal is well suited for the mechanical hand since it can be non-intrusive by any toxic substances and in any harmful environment. As in today's world of industrialization the demand for sensor activated arms is increasing day by day. So, the main aim of our project is to make a robotic arm which could be used in any chemical industries and in far off places.

Above mentioned first technique Transmitting of human hand action, in this technique hand can be made by leather which is operated by human hand. In five fingers of hand flex sensors are connected through wires and that whole connection are connected to ADC.

In second technique flex sensor is use as sensing device. Flex sensor are used to determine joint movement or placement. Flex sensors are analog resistors. These resistors work as variable analog voltage divider. Inside the flex sensor are carbon resistive elements with thin flexible substrate. More carbon means less resistance. When the substrate is bent the sensor produces resistance output relative to the bend radius. The flex sensor achieves great form-factor on a thin flexible substrate. When the substrate is bent, the sensor produces a resistance output correlated to the bend radius. This output can be transmit to ADC. In ADC signal can be converted in digital form.

Whatever analog data is received by ADC can be displayed on LCD in digital form.

The action performed by human hand using leather glove, the same is interpreted by a mechanical hand at the receiver side.

### III. REQUIREMENTS OF THE PROJECT

- 1) In chemical industry. (Where toxic substances are use)
- 2) In hospital. (Surgical operation)
- 3) In space shuttle. (Earth to space or vice versa)

### IV. EXPERIMENTAL SET-UP

#### A. Circuit Diagram:



Fig. 1: circuit diagram

The final system will consist of a mechanical hand at the receiver. The servo motors can be connected to the finger of mechanical hand. For the system we are developing, the servo motor is moveable and will adjust its position as for requirement. The circuit diagram ,robotics arm and flowchart related to the project are as following:

**B. Robotics Arm:**



Fig. 2: Robotics arm

**V. BLOCK DIAGRAM OF THE PROJECT**

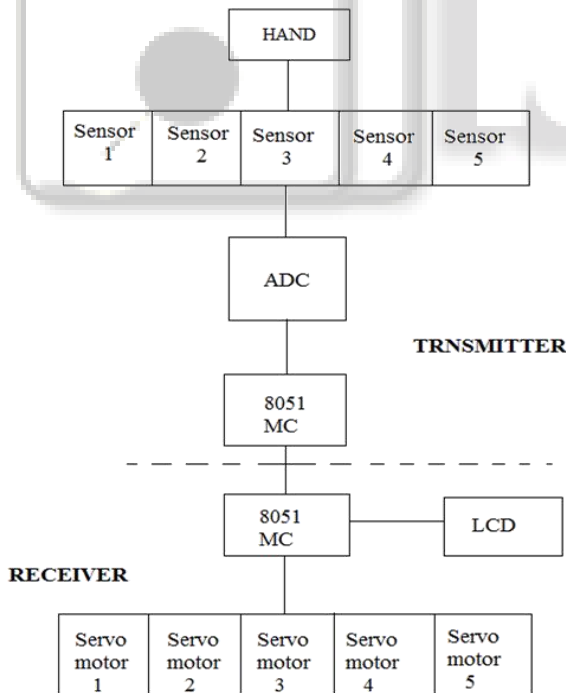


Fig. 3: block diagram

**VI. CONCLUSION**

This Paper illustrates application of Wireless Communication between two far off places and also in chemical industries where toxic substance are used.

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