Telematics Robotics

Shahenaz S. Munera[1] Jinal R. Patel[2] Vibhuti D. Patel[3] Bhavika P. Bhagat[4] Kirtee F. Ganvit[5]

[1, 2, 3, 4, 5]Electronics & Communication Department

[1, 2, 3, 4, 5]Government Engineering College, Bharuch – 392 002.

Abstract---The aim of the work was to develop telematics applications to be used in hospitals, chemical industries. At transmitter a glove enclosed in a hand is manually operated, the receiver catches the signal of manually operated hand and works accordingly.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.

Key words: Leather arm**,** Flex sensor, ADC, Servo motor, LCD, Microcontroller, Cardboard arm, TELEMATICS ROBOTICS.

I. INTRODUCTION

The contribution investigates new methods and tools for design of next-generation telematic systems based on hybrid teams of cooperating robots and humans. The contribution presents selected issues of building the feature of presence in such telematic systems, deals with human-robot integration and cooperation issues together with drawbacks and benefits of the technology in question.

II. PROBLEM DESCRIPTION

Bidding to make the human activities easier and to become more powerful leads to focusing on development of specific technical tools for extension of human natural abilities. These cover mainly devices and tools that enable further improvements on the level of humans' sensory and perception system, providing him/her completely new, or normally unavailable, observations.

One of possible ways to achieve the previous goal is to apply so-called wearable computing technologies opening the possibilities to access desired information at any time and any place. So far, many daily working activities can endanger the human. To avoid this, (semi)autonomous machines - robots - can be used as substitutes for the living entities. Nevertheless, overtaking the danger from humans not always brings purely positive gain in the overall performance: the robot needs not to be capable of execution of the desired maneuvers or operations, or to obtain complete survey of the working environment.

III. 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 ADC
4. Displaying ADC value on LCD
5. Action performed by mechanical hand

Making project on robotics is just not an experiment but its real implementation in day to day life actual will replace mankind, making their work not only easy but with efficiency.

First technique of Transmitting human hand action, in this technique hand can be made by leather which is operated by human hand. Every flex sensor will be connected to ADC for digitalization of the analog signal.

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 transmitting 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.

IV. REQUIREMENTS OF THE PROJECT

1. Emergency trauma care
2. Battlefield surgery
3. Remote area assistance
4. One-to-many telemonitoring
5. Space station surgery

V. EXPERIMENTAL RESULTS

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:

Fig. 1: Transmitter Circuit

Fig. 2: Robotics Arm:

VI. CONCLUSION

The presented system can be considered as a platform for foundations with expected reuse in advanced buildups of heterogeneous human-robot communities. The within system acting humans and robots are able to effectively share knowledge and data, mutually communicate within the community. In addition, the humans acquire new capabilities to act as a robot.

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