Telepresence Robot

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Abstract- *Telepresence robot is a robot system which is specifically designed for augmented telepresence with components such as micro processor which makes it to act independently. It allows user to remotely interact with other users and provides an effective communication. The robot is controlled by using Arduino mega2560 and for processing; it uses its application of its own. The main objective of this robot is to develop a fully robotic platform that pairs with android phone or tablet. A telepresence robot is the one which gives a humanoid robot impression and works like human intelligence without any continues input from user but works according to the programs and sensors implemented on it.*

Keywords- Arduino mega 2560, Encoder motor, ESPN, IR sensor, Relay.

I. INTRODUCTION

In today's era of distance control and autonomous vehicles, the concept of tele-presence plays an important role in many applications where presence of human being is not possible. Such applications include but not limited to rescue missions extreme terrains and environmental conditions using intelligent and human being controlled robots, telesurgery, industrial and security inspections and Unmanned Arial Vehicles (UAVs) for 3D modeling [1-4]. Furthermore,

Telepresence technology can provide users with solutions for advanced mobile video conferencing communication and remote navigation. A virtual presence environment can be provided by such robots. The robots are equipped with a screen displaying smiling mug to co-workers, as well as a camera that beams a feed straight to the computer screen [5, 6]. Tele-presence robot gives the sense of user or human being present in the scene and works according to the implemented programs and micro controllers even if the robot is placed in remote location from the user. Therefore information may be traveling in both directions between the user and the remote location with automatic operation. Although robots have the programming logic to do the desired task but the decision power lies in the hand of the controller (human) handling the robot[7].

II. IDENTIFY, RESEARCH AND COLLECT DATA

This literature deals with the development of two telepresence robot namely VGO and KUBI. The application they have been used for is to support a physically handicapped person personally in their daily life. The above two models form the basis for the present work carried by us. The author explains about the way of which the telepresence she is used. The author describes the technology and briefly summarizes the research that led to the purchase of the robots. The implications extend beyond uses of telepresence robots in cases of mobility impairment to academic contexts in general.[1].

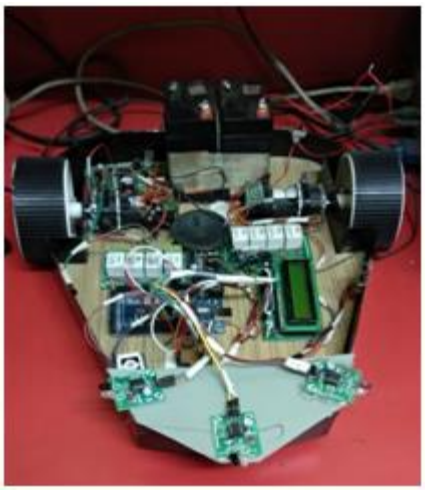

Fig.1. Shows the base assembly of the telepresence robot.

III. CASE STUDIES

The case deals design and implementation of several electronic components to achieve the objective of detecting the obstacle and navigating towards the defined remote location. The paper gives the details about the various sensors used and the function of it. The paper briefly explains about the sensors which can be used in a machine for various purpose of application. In this paper, we present the design and implementation of a multi-sensor based object detecting and moving autonomous robot exploration system, 4RE, with the VEX robotics design system. With the goals of object detecting and removing in complex ground environment with different obstacles, a novel object detecting and removing algorithms is proposed and implemented.[Fan Wu, et.al(2014)][1].

The paper deals with the mechanism about the modeling and Adaptive Control of an Omni-Mecanum-Wheeled Robot. Then based on the dynamics model, a nonlinear stable adaptive control law is derived using the back stepping method via Lyapunov stability theory. In order to compensate for the model uncertainty, a nonlinear damping term is included in the control law, and the parameter update law with σ-modification is considered for the uncertainty estimation. Computer simulations are conducted to illustrate the suggested control approach.[Lih-Chang Lin, et.al(2013)] [2] .

The author introduces the robot in which the application is to travel in a defined path and completes the given task. The author does a survey of a robotic support given to the people in a hotel; the survey gives out the following result. 1. Fifty-six percent of the people surveyed would like to have robotic room service. 2. 51% of the people surveyed would want a robot that can deliver room items. 3. Half of respondents age 25 - 34 would more willing to choose to stay in a hotel with robot than without one. The author uses a programmed robot which goes from room to room to provide the required service requested by the customers. The robot has a predefined program given to the aurdino mega which makes the robot go to the defined location which is given in terms of the distance and stops. This paper explains about the working of microprocessor such as aurdino mega with the help of which the robot travels.[Belal Khawja Ashhad, et.al(2015)] [3].

Fig.2.Shows the final assembly of the robot.

IV. CONCLUSION

The telepresence robot consists of a display of the mobile which is attached to the stand and controlled via arduino mega2560. The movement of the robot is automatic and also can be controlled by the wifi module through the local host for long range interaction. Raspberry Pi with the camera is used for the conferencing purpose. After the connection was complete, testing of the setup was done to make sure that it could be controlled. To control the server, a local server is used to catch the user initiated events. Our main focus was on artificial intelligence to improve the user experience. The robot is made to stop whenever the obstacle is detected. The navigation of robot can be controlled by the wifi module. The robot senses the obstacle via sensor, stops and produces the beep sound.

V. ACKNOWLEDGEMENT

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