VR Based Telerobot

In today's generation, nothing can sound more interesting than having to experience something without actually spending time and money to be there. For example, in the air force, the new pilots can perform their flight manoeuvres, ejecting, crashing without actually having to crash a million-dollar plane in their flight training programs. There are many such instances where we would prefer experiencing certain things without physically being there.

In order to make things more emotionally relatable, we are going to integrate virtual reality with robotics to enable us to see and communicate at a place remote from where we presently are. We make use of a robot with a camera mounted on it along with a microphone module. On the user end, we provide a virtual reality experience through virtual reality headset along with earphones, enabling end to end communication. Additionally, the user is also provided with a joystick to control the movement of the robot.

This robot is equipped with a rocker bogie mechanism which enables it with an ability to climb staircase effortlessly.

The gyroscope is used for tracking the user's head position. This information is transmitted to the robot, with the use of Internet of Things (IOT) and the camera on the robot changes its position based on the readings received, analogous to the position of user's head.

It has wide range of applications. For instance, consider the 26/11 Taj hotel attacks in Mumbai, where a group terrorists had invaded the hotel. The operation Black Tornado was started by the Indian army to rescue the people in the hotel. In this mission many of our soldiers became martyrs. In this instance, we can first send these robots into the rescue zone (in this case hotel) before the soldiers enter. The robot can be controlled from the control room by the concerned authority and the virtual reality feature helps in precise analysis of the situation. The information from the robot is analysed and this information can be passed on from the control room to the soldiers in the rescue zone who can take necessary action.

However our main motive of using this is in the field of tourism. For instance, a person who wants to visit a place in abroad, it might not be economically feasible for him to go there. Instead we could place our robot in all the major tourist places and provide the VR headset along with the controller to the person who wishes to enjoy the places. Several remote centres can be opened all over the country to enable people to have access to the robot on rent basis. By this way, people can have enjoy the places very far from them at a cheaper cost in a more realistic way. One such technique was tried in Arignar Anna Zoological Park, Chennai, Tamil Nadu where camera where fixed on a particular places on the zoo and the video was live streamed. But in this case, people will have a fixed view and also can watch the animals only when they come in the area of surveillance. On using our robot, they can navigate through the entire zoo and can have a First Person View of the zoo. This idea thus could revolutionise the field of tourism and could take it to a newer level.

Consider another situation where a teacher is not able to make it to the class. By using this robot, the teacher can effectively handle a session by having the robot in the classroom and he being elsewhere. He can get real time data about the class by just moving the robot in the classroom and also can deliver a lecture. Apart from these, it can be used for surveillance in defence sector, traffic regulation, assisting handicapped people who can control the robot with just a finger. It can be fixed with land mine detector and can be sent to war zone to prevent loss of human life.

Components Required:

- Raspberry Pi
- Robot Chassis and Wheels
- IR Camera
- Camera
- Joystick/Smartphone
- Laptop
- Microphone
- VR headset
- Gyroscope

Expected range of cost for the project is between 8000 INR -10000 INR.

This robot helps us to digitally teleport ourselves to the area where the robot is placed. This project will help us look at the world with new lenses all together!