Gesture Controlled Robot using Image Processing

ABSRACT

Service robots directly interact with people, so finding a more natural and easy user interface is of fundamental importance. While earlier works have focused primarily on issues such as manipulation and navigation in the environment, few robotic systems are used with user friendly interfaces that possess the ability to control the robot by natural means. To facilitate a feasible solution to this requirement, we have implemented a system through which the user can give commands to a wireless robot using gestures. Through this method, the user can control or navigate the robot by using gestures of his/her palm, thereby interacting with the robotic system. The command signals are generated from these gestures using image processing. These signals are then passed to the robot to navigate it in the specified directions.

In today's age, the robotic industry has been developing many new trends to increase the efficiency, accessibility and accuracy of the systems. Basic tasks could be jobs that are harmful to the human, repetitive jobs that are boring, stressful etc. Though robots can be a replacement to humans, they still need to be controlled by humans itself.

Robots can be wired or wireless, both having a controller device. Both have pros and cons associated with them. Beyond controlling the robotic system through physical devices, recent method of gesture control has become very popular. The main purpose of using gestures is that it provides a more natural way of controlling and provides a rich and intuitive form of interaction with the robotic system. This mainly involves Image Processing and Machine Learning for the system or application development. Beyond this, it also requires some kind of hardware for interfacing with the system for gesture control. There are some systems that have been developed in the same field using various techniques.

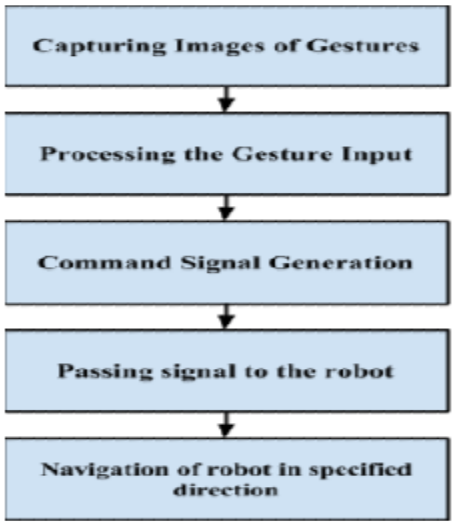

Fig: Basic flow of System

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