Abstract

This paper aims at providing real-time vision-based robot-navigation for disaster management scenarios. The task is to navigate a robot in unstructured environments by using gestures. Navigation is an important task that is to be performed while traversing a particular path in a disaster management scenario. There are various methodologies like autonomous mapping and SLAM techniques in which the robot is trained itself to create the path by making a map, but training the robot and creating a map itself requires a lot of time and is a tedious process. Meanwhile, in this approach, real-time video streaming is done by the robot itself that is being transmitted to the user who in turn controls the robot using gestures. Apart from streaming the video, we also find the closest obstacle distance using IR sensors. For the purpose of performing a particular task for a detected gesture, the robot needs to have intelligence. This intelligence is the algorithm that is loaded into the robot to make it perform the task assigned to it. Here, we make use of principle component analysis along with image moments for identifying the gestures and thereby controlling the robot. Real-time implementation is done on iRobot platform.


Vision based Robot Navigation for Disaster Scenarios


Index Terms

Computer Science  Multimedia

Keywords
PCA  Image moments  video streaming  Disaster management