World Academy of Science, Engineering and Technology
International Journal of Mechanical and Mechatronics Engineering
Vol:8, No:7, 2014

Human Machine Interface for Controlling a Robot Using Image Processing

Authors : Ambuj Kumar Gautam, V. Vasu

Abstract : This paper introduces a head movement based Human Machine Interface (HMI) that uses the right and left movements of head to control a robot motion. Here we present an approach for making an effective technique for real-time face orientation information system, to control a robot which can be efficiently used for Electrical Powered Wheelchair (EPW). Basically this project aims at application related to HMI. The system (machine) identifies the orientation of the face movement with respect to the pixel values of image in a certain areas. Initially we take an image and divide that whole image into three parts on the basis of its number of columns. On the basis of orientation of face, maximum pixel value of approximate same range of (R, G, and B value of a pixel) lie in one of divided parts of image. This information we transfer to the microcontroller through serial communication port and control the motion of robot like forward motion, left and right turn and stop in real time by using head movements.

Keywords : electrical powered wheelchair (EPW), human machine interface (HMI), robotics, microcontroller
Conference Title : ICMME 2014 : International Conference on Mechanical and Mechatronics Engineering
Conference Location : Singapore, SG
Conference Dates : July 05-06, 2014