IEEE International Conference on Intelligent Robots and Systems, 2011, pages 283-288

Real-time robot-human interaction by tracking hand movement & orientation based on morphology

Abstract

In this paper we present a method that allows real time tracking on a hand in 3D space and notes its orientation and position accordingly, with the goal of ultimately tying it to a robotic spherical wrist as well as the wrist's 3D position. Several image processing techniques were used in conjunction with mathematical morphological filters formulae in order to understand the hand's position and orientation. The proposed methods have showed great success in identifying the Nonlinear systems, variable 3D levels of hand movements and rotations correctly, which could be applied in different types of robotic manipulators, computer simulations or a number of human-computer remote handling interactions. Real time took place in system response.

Keywords —3D space, 3D positions, hand movement, real time, real time tracking, robot-human interaction, morphological filters