HUMAN BEHAVIOUR RECOGNITION, IDENTIFICATION, AND COMPUTER INTERACTION

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Review on Hand Gesture Recognition

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9.1. INTRODUCTION

The aim of this chapter is to present a review on the development of vision systems based on hand gesture. Vision-Based Human to Computer Interaction (HCI) systems has the ability of carrying a wealth of information in a natural way and at a low cost. Therefore hand recognition becomes a widely studied topic with a wide range of applications such as SL translators, gesture recognition for control, augmented reality, surveillance, medical image processing, and etc. Hand recognition with no constraint on the shape is an open issue because the human hand is a complex articulated object consisting of many connected parts and joints. Considering the global hand pose and each finger joint, human hand motion has roughly 27 degree of freedom (DOF) [1].

Hand posture and/or gesture recognition systems can identify specific human hand posture and/or gesture and use them to interact with particular machines/computers. Hand gesture recognition system should be able to track the hand and interpret that movement as a meaningful command. The system architecture for hand gesture recognition can be categorized into two main classes based on its input. First, data gloves based system which employs sensors attached to a glove that transform finger flexions into electrical signals for determining the hand posture. Second is a vision-based system, of which hand gesture input is from camera. This approach also can be categorized into two types, those with colour marker and those without marker, i.e. using bare hands.

9.2. HAND POSTURE AND GESTURE

Hand signs can be defined as postures or gestures [2]:

Hand Posture is defined solely by the static hand configuration and hand location without any movement involved.