

HUMAN BEHAVIOUR
RECOGNITION,
IDENTIFICATION,
AND COMPUTER
INTERACTION

Edited by

Othman Omran Khalifa, B.Sc., M.Sc., Ph.D.,
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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Chapter 8

Human Posture Recognition Implementation and Deployment

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8.1. Introduction

The recognition of human postures is usually the initial step in human behavioral analysis. It is a challenging problem due to the huge quantity of possible cases. The number of postures depends on the degree of freedom of the human body. Moreover, the physical attributes and clothes of a person influence the perception of a particular posture. There are two general techniques for human posture recognition: intrusive and non-intrusive techniques. Intrusive techniques make use of sensors and markers placed on the human body for data acquisition. In contrast, non-intrusive techniques use remote sensing devices such as video cameras for data acquisition. For the purpose of video understanding, non-intrusive techniques are superior to intrusive ones because the observed person is not always cooperative [2].

8.2. Methodology and Implementation

A single static camera has been used and video sequences have to be recorded as part of the data acquisition task. The environment where video recording took place is indoors with a relatively simple background scene. Only one person is assumed to be present in front of the camera at a time. All the implementations have been done in MATLAB R2008a. The human posture recognition system, like other intelligent computer vision systems, is composed of training stage and evaluation stage. The outputs of the preprocessing are binary images which are then randomly divided into training dataset and testing (or evaluation) dataset in a certain ratio. The binary preprocessed images (henceforth referred to as training samples) are trained and evaluated with various classifiers. Each classifier has to be trained and tested one at a