HUMAN BEHAVIOUR RECOGNITION, IDENTIFICATION, AND COMPUTER INTERACTION

Edited by

Othman Omran Khalifa, B.Sc. ,M.Sc., Ph.D.,
International Islamic University Malaysia

Shihab A. Hameed, B.Sc., M.Sc., Ph.D.,
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Chapter 4

Human Posture Recognition Classifiers

Kyaw Kyaw Htike[1], Othman O. Khalifa[1], Lai Weng Kin[2] and MD Rafiqul Islam[1]

[1]Department of Electrical and Computer Engineering

International Islamic University Malaysia

ali.kyaw@gmail.com, khalifa@iium.edu.my

4. 1 INTRODUCTION

Human activities recognition is becoming a field of great interest and relevance to a number of areas of research and applications The availability of a system capable of automatically classifying the physical activity performed by a human subject is extremely attractive for many applications such as in surveillance and security systems, choreography, sports, virtual reality, human-computer interaction, content-based image and video retrieval, automatic scene understanding and other vision-based interfaces. In particular, there has been incredible growth in the volume of computer vision research geared at understanding huma actions and behaviors. These advances range from classification of basic low-level activities such as recognizing someone walking or sitting, to the higher level task of recognizing an interpreting the global behavior of several interacting people [1].

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].

4.2 Human Posture Recognition Classifiers

The binary preprocessed images (henceforth referred to as training samples) are trained and evaluated with various classifiers whose performances are to be compared. The classifiers used are:

1. Multilayer Perceptron Feed-forward Neural Networks (MLP).