

HUMAN BEHAVIOUR
RECOGNITION,
IDENTIFICATION,
AND COMPUTER
INTERACTION

Edited by

Othman Omran Khalifa, B.Sc., M.Sc., Ph.D.,
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Chapter 32

Face Verification: An Introduction

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32.1. INTRODUCTION

Human biometrics especially face become widely used for different aspects of life. The face is the first defining characteristic that we use to identify people. It is recalled when trying to remember what someone looks like. We depend on it, for recognition. We carry photo IDs that we show as proofs of identity. On the cards are pictures of our face.

Machine or automatic recognition of human faces has attracted a great deal of attention in the psychology, image processing, pattern recognition, neural science, computer security, and computer vision communities. Its popularity results from its wide application ranging from static matching of controlled format photographs, such as passports, credit cards, driving licenses, and police photos, to real-time matching of video images for surveillance, access control, and security of public areas such as airports. Face is an essential application used in authentication.

In this chapter, a brief background about automated face recognition is given then a short review about face recognition algorithms. Eigenface algorithm has been explained in details as one of the famous algorithms.

32.2 AUTOMATIC FACE RECOGNITION

As one of the most successful applications of image analysis and understanding, face recognition has recently received significant attention, especially during the past few years. This is evidenced by the emergence of face recognition conferences such as the International Conference on Audio and Video-Based Authentication (AVBPA) since 1997. Also the International Conference on Automatic Face and Gesture Recognition (AFGR) since 1995, systematic empirical evaluations of face recognition techniques (FRT), including the FERET, FRVT 2000, FRVT 2002, and XM2VTS protocols, and many commercially available systems (Rizvi, Philips, and Moon, 1998). There are at least two reasons for this trend; the first is the wide range of commercial and law enforcement applications and the second is the availability of feasible technologies after more than 30 years of research. In addition, the