HUMAN BEHAVIOUR RECOGNITION, IDENTIFICATION, AND COMPUTER INTERACTION

Edited by

Othman Omran Khalifa, B.Sc. ,M.Sc., Ph.D.,
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Chapter 28

SPEAKER RECOGNITION USING MEL FREQUENCY CEPSTRUM

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28.1. Introduction

Automatic speaker recognition is the use of a machine (i.e. software or hardware) to recognize a person from a spoken phrase. This is done by identifying characteristic acoustic features of their voice which is unique. This makes it possible to use the speaker`s voice to verify their identity and can be used to control access to services such as voice dialing, banking by telephone, database access service, security control for confidential information area and remote access to computers. Basically prior to a verification or identification session, users that are authorized to use the system will need to undergo enrollment session, where they provide speech samples that will be processed and stored in the database in order to be used later during the identification process. Here only certain important features that are unique to individuals are extracted while other redundancies are discarded.

The use of personal features, unique to all human being to identify or to verify a person`s identity is a field that is being actively researched. This can be seen in the usage of finger print, retina pattern and voice pattern in various applications to identify or to verify the identity of an individual. The use of fingerprint is perhaps one of the earliest applications of biometrics or personal features, to identify a person. Here in this review the focus is more on voice identification. Speaker or voice verification / identification can be classified as shown in figure 28.1. The speaker recognition system consists of the following steps :Speaker identification; in this system, when a user inputs a test utterance, the system will identify which of the speaker made the utterance according to the speech patterns stored in the database. Therefore here the output will be either the name of the user or the system will reject if the users speech pattern is not in the database.