

HUMAN BEHAVIOUR
RECOGNITION,
IDENTIFICATION,
AND COMPUTER
INTERACTION

Edited by

Othman Omran Khalifa, B.Sc., M.Sc., Ph.D.,
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IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011
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Cataloguing-in-Publication Data Perpustakaan Negara Malaysia

ISBN: 978-967-418-156-7

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN. BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan

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Chapter 30

Speaker's Variabilities, Technology and Language Issues that Affect Automatic Speech and Speaker Recognition Systems

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30.1. Introduction

Automatic Speech Recognition (ASR) is gaining its importance due to the vast growth generally in technology and computing in specific. From industrial perspective, computers, laptops, and mobile devices nowadays have the ASR support embedded into the operating system. From academia on the other hand, there are many research efforts being conducted addressing this technology in order to contribute to its state-of-the-art. On the other hand, speaker recognition systems are also growing due to various threats, therefore, these systems are mostly meant for security purposes.

One might wonder the growing interest earned by the ASR technology. A simple answer would be that ASR technology helps machines mimic human behavior, and this makes them look as natural as human. As a result, machines are expected to converse and communicate back to human in a similar manner to what is expected from other human counterparts. Such machines in return make the interaction and communication between human and machines easier, faster, and safer with less effort than a normal user interface. Therefore, various applications including hands-free operating and control, automatic query answering, interactive voice response, automatic dictation, automatic speech translation, and many others have emerged making great use of ASR technology.

In several situations, applications are of not much benefit to human unless ASR technology provides support to human natural languages worldwide including Arabic, English, Spanish, Mandarin, Dutch and various others. Unlike English, many languages such