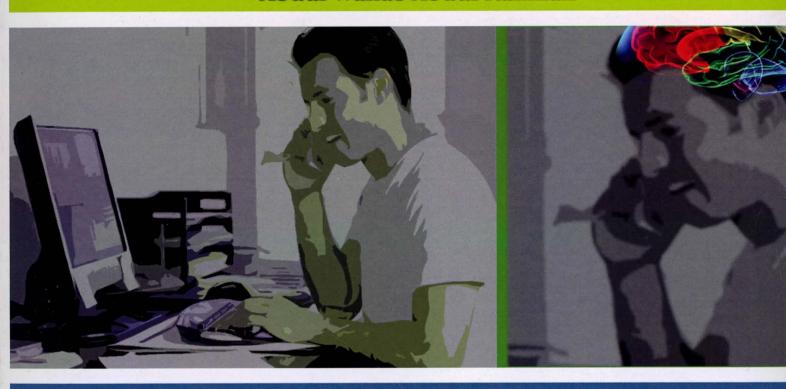
UNDERSTANDING BRAIN DEVELOPMENTAL DISORDER BASED ON EEG IN SOFT COMPUTING APPROACH

Abdul Wahab Abdul Rahman





INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

UNDERSTANDING BRAIN DEVELOPMENTAL DISORDER BASED ON EEG IN SOFT COMPUTING APPROACH

Editors

Abdul Wahab Abdul Rahman



Published by: IIUM Press International Islamic University Malaysia

First Edition, 2011 ©IIUM Press, IIUM

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without any prior written permission of the publisher.

Perpustakaan Negara Malaysia Data Cataloguing-in-Publication

Abdul Wahab Abdul Rahman: Understanding brain developmental disorder based on EEG in soft computing approach

ISBN: 978-967-418-111-6

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

TABLE OF CONTENTS

Dedication	V
Table of Contents	vi
Preface	X
Acknowledgement	xii
Introduction	xiii
Viewing emotions from categorical and dimensional	1
perspectives	
•	
- Hamwira Sakti Yaacob	
- Abdul Wahab Abdul Rahman	
Emotion recognition based on EEG: Brain waves	14
- Abdul Wahab Abdul Rahman	
- Abdul Wanab Abdul Ranman - Norhaslinda Kamaruddin	
- Palaniappan L.K	
- 1 alamappan E.K	
Emotion recognition using EEG signals	37
- Normaziah Abdul Aziz	
- Abdul Wahab Abdul Rahman	
- Najwani Razali	
EEG emotion recognition using features of mel frequency	58
cepstral coefficients	
- Marini Othman	
- Abdul Wahab Abdul Rahman	

- Reza Khosrowabadi	
Emotion detection from brain signals based on musical and	77
visual stimuli	
N O.1	
- Marini Othman - Abdul Wahab Abdul Rahman	
- Abdul Wallab Abdul Kalillali - Reza Khosrowabadi	
Rezu Riosio wududi	
Understanding students' emotion while solving	94
mathematical questions using EEG signals	
- Normaziah Abdul Aziz	
- Normazian Abdul Aziz - Abdul Wahab Abdul Rahman	
- Marini Othman	
- Najwani Razali	
Understanding stress by analyzing the brain when solving	111
mathematical task	
- Abdul Wahab Abdul Rahman	
- Norzaliza Md. Nor	
TOTALIZATION	
Classification of EEG signals for understanding affective	135
face processing impairment in autism	
A1 1 1 W 1 1 A1 1 1 D 1	
Abdul Wahab Abdul RahmanMarini Othman	
- Marini Otiman	
Detection of autism spectrum disorder based on 2D	155
affective space model (ASM)	
, ,	
- Abdul Wahab Abdul Rahman	
- Najwani Razali	
Detection of autism spectrum disorder (ASD) based on	177
motor imitation	- ' '
- Abdul Wahab Abdul Rahman	
- Najwani Razali	
I and the second	1

Critical features among autistic children based on EEG for	195
motor imitation: Dynamic analysis approach	
- Abdul Wahab Abdul Rahman	
- Najwani Razali	
Principle component analysis for detecting autism during	215
motor movement	213
motor movement	
- Abdul Wahab Abdul Rahman	
- Wafaa Khazaal	
Understanding human stress and depression with relation to	237
cultural and language differences	
411177114117	
- Abdul Wahab Abdul Rahman - Rahnuma K.S	
- Kannuma K.S - Hariyati	
- Bjorn Cruts	
Djoin Cruts	
Understanding stress using EEG-VA approach	252
-	
- Abdul Wahab Abdul Rahman	
- Rahnuma K.S	
Tindameter direction in the state of the sta	251
Understanding driver behavior based on driver	271
identification and driver's emotion verification	
- Abdul Wahab Abdul Rahman	
- Norzaliza Md. Nor	
- · · · - · · · · · · · · · · · · · · ·	
Understanding driver behavior according to brain signal	303
and DASS 21 analysis	
- Abdul Wahab Abdul Rahman	
- Norzaliza Md. Nor	
Doct posident analysis housing a law 1	22.4
Post accident analysis by using valence arousal approach	334
(VAA)	
- Abdul Wahab Abdul Rahman	
- Norzaliza Md. Nor	

- Harıyatı - Norhaslinda Kamaruddin	
Understanding driver behavior based on the relationship	358
between pre-post accident and pre-cursor emotion	
- Abdul Wahab Abdul Rahman	
- Norzaliza Md. Nor	
- Norhaslinda Kamaruddin	
- Hariyati	
Understanding long term memory effect towards driver's	383
pre-emotion by using EEG	
- Abdul Wahab Abdul Rahman	
- Norzaliza Md. Nor	
- Hariyati	
- Norhaslinda Kamaruddin	
Classifying users emotions towards the quranic recitation	404
using EEG: A preliminary study	
- Akram M. Zeki	
- Ahmed M. Zeki	
- Daeng A.Z.Z	
- Rosyuhadah Tahir	