FUNCTIONAL MRI ANALYSIS FOR COMPUTER AIDED DIAGNOSIS OF MENTAL DISEASES

By

Ali Hamid Muthanna Algumaei

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
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in
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Summary:
Mental disorders, especially schizophrenia, are still challenging to diagnose. Nowadays, computer-aided diagnosis techniques have been developed to tackle this challenge. Data denoising and preprocessing were first applied, followed by the feature extraction. The extracted features were then reduced using the Principal Component Analysis (PCA), and the best discriminative features were selected using different feature selection algorithms such as the Fisher score and t-test. A Support Vector Machine (SVM) classifier was trained and tested on the COBRE dataset which contains 70 schizophrenic and 70 healthy subjects. The highest average accuracy of 98.57\% has been achieved.

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Dedication

This thesis is dedicated to my parents, brothers, wife, sons (Mazen and Yazan) and my friends.

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