

هذا من فضل ربّي

:

This is of the bounty of my Lord, to test me as to weather I am grateful or ungrateful. He who is grateful is but grateful for his own good; and he who is ungrateful, verily, my Lord is self-sufficient, most generous.

Prophet Solomon

Quran 27:40

**KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
DHAHRAN 31261, SAUDI ARABIA**

COLLEGE OF GRADUATE STUDIES

The thesis, written by

Adnan Abdul-Aziz M. S. Gutub

under the direction of his thesis advisor and approved by his Thesis Committee,
has been presented to and accepted by the Dean of the College of Graduate
Studies, in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN COMPUTER ENGINEERING

Thesis Committee:

Dr. Alaaeldin Amin (Chairman)

Dr. Khalid Elleithy (Member)

Dr. Khalid Al-Tawil (Member)

Department Chairman

Dean, College of Graduate Studies

Date

Dedicated

To

My Parents

Acknowledgments

First and foremost, all praise to the Almighty ALLAH who gave me the courage and patience to carry out this work.

Acknowledgment is due to King Fahd University of Petroleum and Minerals for providing support to do this work.

My deep appreciation goes to Dr. Alaaeldin Amin, who served as my Thesis advisor. I also wish to thank the other members of my Thesis Committee Dr. Khalid Elleithy and Dr. Khalid Al-Tawil.

Thanks are due to my Professors: Dr. Sadiq Sait, Dr. Mostafa Abd-El-Barr and Dr. Atif Al-Najjar, for their encouragement and valuable advises.

I am very grateful to my wonderful wife (Manal M. Fattani) and children (Muna and Alaa), without their patience and sacrifices such a major undertaking and its completion would have not been possible.

Finally, my profound gratitude and appreciation go to the rosy part of my life, to my mother (Amnah S. Sait) and father (Dr. Abdul-Aziz M.S. Kutub), for their continuous prayers, encouragement and moral support.