ACKNOWLEDGEMENTS

In the beginning, thanks God, who give me the support and the ability to finish this work.

I would like to thank and express my deepest appreciation to my supervisor **Prof. Dr. Hassan Gaber El Ghazouly,** Prof. of Surveying and Geodesy, Faculty of Engineering, Alexandria University, for his support, patience, and continuous gentle prodding.

My immeasurable thanks go to **Prof. Dr. Mohammed Mahmoud Hosny,** Prof. of Surveying and Geodesy, Faculty of Engineering, Alexandria University, for his useful gaudiness, smart ideas and endless support.

I express my gratitude to **Prof. Dr. Hossam Farid El-Hbrouk,** Prof. of Surveying and Geodesy, Faculty of Engineering, Alexandria University, for his continuous support and valuable supervision during the achievement of the research.

I owe a great intellectual debt to all the supervision staff; I would like to express my appreciation for them.

Special thanks to my **family; Parents, Sisters, and Brother**.

My unending gratitude to my friend and husband, **Dr Mohammed Obada**, who encouraged and supported me to finish this research.

Finally, I dedicate this work to my lovely son **Adam Obada.**

TABLE OF CONTENTS PAGE

ABBRIVIATIONS

MDC:	**Minimum Distance to Class**
ARIH:	**Advanced Resources International Houston**
ASTER:	**Advanced Spaceborne Thermal Emission and Reflection Radiometer**
AVG:	**Average**
BP:	**British petroleum**
DEM:	**Digital Elevation Models**
DN:	**Digital Number**
DTM:	**Digital Terrain Models**
ED:	**European Datum**
EM :	**Electromagnetic Spectrum**
ETM :	**Enhanced Thematic Mapper**
FCC:	**False Color Composite**
FOV:	**Field Of View**
FSP:	**Feature Selection Program**
GCP's:	**ground control points**
GOSD:	**Global Offshore Seeps Database**

GPS:	**Global Positioning System**
ha:	**Hectare**
HC:	**Hydrocarbon**
IFOV:	**Instantaneous Field Of View**
Landsat TM:	**Landsat Thematic Mapper**
NDVI:	**Normalized Difference Vegetation Index**
NIR:	**Near Infra Red**
NPA	**: National Petroleum Authority**
PC:	**Principal Component**
PCA:	**Principle Component Analyses**
SAM :	**Spectral Angle Mapper**
SAR :	**Synthetic Aperture Radar**
SD:	**Standard Deviation**
SWIR:	**Short Wave Infra Red**
TIR:	**Thermal Infra Red**
UAE:	**United Arab Emirates**
USGS:	**United States Geological Survey**

USTC : **Universal Short Title Catalogue**

UTM: **Universal Transverse Mercator**

VNIR: **Visible Near Infra Red**

WGS: **World Geodetic System**

LIST OG FIFURES

LIST OF TABLES