

CONTENTS

APPROVAL	ii
SELF DECLARATION AGAINST PLAGIARISM	iii
ABSTRACT	iv
ABSTRAK	v
CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	xi
LIST OF TERMS	xii
1 INTRODUCTION	1
1.1 Rationale	1
1.2 Theoretical Framework	2
1.3 Conceptual Framework/Paradigm	3
1.4 Statement of the Problem	3
1.5 Objective and Hypotheses	4
1.6 Assumption	4
1.7 Scope and Delimitation	4
1.8 Significance of the Study	4
2 REVIEW OF LITERATURE AND STUDIES	5
2.1 Related Literatures	5
2.1.1 Finite-state morphological analysis and generation of Arabic at Xerox Research: Status and plans in 2001	5
2.1.2 A computational lexeme-based treatment of Arabic morphology	5
2.1.3 Standard arabic morphological analyzer (SAMA)	5
2.1.4 MAGEAD: a morphological analyzer and generator for the Arabic dialects	5
2.1.5 A syllable-based account of Arabic morphology	6
2.1.6 Elixirfm: implementation of functional arabic morphology	6
2.1.7 A lexicon of Arabic verbs constructed on the basis of Semitic taxonomy and using finite-state transducers	6
2.1.8 Arabic Word Generation and Modelling for Spell Checking	6

2.1.9	Jabalín: a Comprehensive Computational Model of Modern Standard Arabic Verbal Morphology Based on Traditional Arabic Prosody	6
2.1.10	Rule Based Pattern Type of Verb Identification Algorithm for The Holy Qur'an	7
2.2	Related Studies	7
2.2.1	Recurrent Neural Network	7
2.2.2	Recurrent Neural Network for Morphological Analyzer	8
2.2.3	Syntax (<i>Nahwu</i>)	9
2.2.4	Morphology (<i>Sharaf</i>)	9
2.2.5	Verb (<i>fiil</i>)	10
2.2.6	Arabic Weak Letter	11
2.2.7	Arabic Buckwalter Transliteration	12
2.2.8	Pattern Table	12
2.2.9	Morphosyntactic Description (MSD)	13
2.2.10	Subword Models	14
3	RESEARCH METHODOLOGY	15
3.1	Research Design	15
3.1.1	Flowchart	15
3.1.2	Data Preprocessing	16
3.1.3	Build RNN Model	18
3.1.4	Testing	22
3.2	Population/Sampling	24
3.2.1	Data Source	24
3.2.2	Data Generation	24
3.2.3	Experiment Scenario	24
4	IMPLEMENTATION , AND RESULT ANALYSIS	26
4.1	System Implementation	26
4.1.1	Data Preprocessing	26
4.1.2	Build RNN Model	27
4.1.3	MSD Identification	29
4.2	Jabalin Implementation	31
4.2.1	Jabalin Online Interface	31
4.2.2	Jabalin MSD TAG Mapping	31
4.2.3	Web Crawling Get the Result	32
4.3	Result Analysis	32
4.4	Error Analysis	35

5 CONCLUSION AND RECOMMENDATIONS	37
5.1 Conclusions	37
5.2 Future Work	37
BIBLIOGRAPHY	38
Appendices	41
A MISCELLANEOUS	43