

TABLE OF CONTENTS

Dedication	3
Acknowledgment	4
Abstract.....	I
مستخلص	III
Table of Contents	V
List of Figures.....	IX
List of Tables	X
List of Appendices	XI
Glossary	XII
Chapter One: Introduction	1
1.1 Scope and Motivation	1
1.1.1 What is an Ontology?.....	2
1.1.2 Upper Ontology vs. the Top Levels of the Arabic Ontology	3
1.1.3 Why do we need the top Levels of the Arabic Ontology? And how can they be used in IT applications?	5
1.2 Problem Statement.....	6
1.3 Summary of contribution	6
1.4 Summary and Structural Outline.....	7
Chapter Two: Literature Review.....	9
2.1 Introduction.....	9
2.2 WordNet.....	10
2.3 DOLCE	11
2.4 DOLCE+DnS.....	13
2.5 BFO	14
2.6 SUMO.....	16
2.7 Classification of concepts in Arab Philosophy.....	18

2.7.1 Ta'arifat Al-Jurjani	18
2.7.2 Feqh Al-Lugha wa Asrar al Arabia for Al-Tha'alebi	18
2.7.3. The Arabic Philosophical Concepts.....	19
Chapter Three: Methodology	20
3.1 Introduction.....	20
3.2 The Methodology.....	20
Chapter Four: The Top Levels	32
4.1 The First Level – the Root Concept.....	33
4.2 The Second Level	34
4.2.1 Objects.....	36
4.2.2 Occurrences	37
4.2.3 Information Entities.....	39
4.2.4 Dependent Entities	40
4.2.5 Abstract Entities.....	42
4.3 The Third Level.....	43
4.3.1 Types of Objects	44
4.3.2 Types of Occurrences.....	47
4.3.3 Types of Dependent entities.....	51
4.3.4 Types of Abstract entities	58
4.4 Other Lower Levels	67
4.4.1 Types of Physical Objects.....	67
4.4.2 Types of Social Objects.....	74
4.4.3 Types of Events.....	80
4.4.4 Types of Qualities.....	82
4.4.5 Types of Formal Entities	87
4.4.6 Types of Attributes.....	99
4.4.7 Types of Quantities	102
Chapter Five: Evaluation and Results	104
5.1 Introduction.....	104

5.2	Experiment setup and the Evaluation	104
5.3	Analysis and Discussion of the evaluation results of the "Object - موجود"	
	branch:	110
5.4	Analysis and Discussion of the evaluation results of the "Occurrence - حدث"	
	branch:	116
5.5	Analysis and Discussion of the evaluation results of the "Information Entity -	
	تعبير" branch:	119
5.6	Analysis and Discussion of the evaluation results of the "Dependent Entity -	
	منوط" branch:	119
5.7	Analysis and Discussion of the evaluation results of the "Abstract - مجرد"	
	branch:	123
5.8	Calculating the comprehensiveness of the constructed top levels of the Arabic	
	Ontology:	126
5.9	Evaluating the top levels of the Arabic Ontology using an article of common	
	words:128	
5.10	The comprehensiveness of the "Object – موجود" branch:	131
5.11	The comprehensiveness of the "Occurrence - حدث" branch:	132
5.12	The comprehensiveness of the "Dependent Entity - منوط" branch:	133
5.13	The comprehensiveness of the "Abstract - مجرد" branch:	133
5.14	Calculating the comprehensiveness of the constructed top levels of the Arabic	
	Ontology based on the second evaluation:	134
5.15	Conclusions and list of suggestions:.....	135
Chapter Six: Conclusion and Recommendation for Future Work		137
6.1	Conclusion	137
6.2	Recommendations and Future Work	137
References		139
Appendices.....		142
Appendix I - The taxonomies of the foreign upper ontologies		143
The Taxonomy of DOLCE (Masolo, Borgo, Gangemi, Guarino, & Oltramari, 2003)		143
The Taxonomy of DOLCE+DnS		144
The Taxonomy of BFO (Smith, 2012)		145