AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING

A MODEL FOR ARABIC SYNTAX
AND
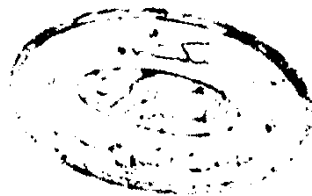# MORPHOLOGY

By

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A Thesis

Submitted in partial fulfillment for the

requirements of the Degree of M.Sc. in

Electrical Engineering (Computer)

Supervised by

Prof. Dr. HUSSEIN I. SHAHEIN

Cairo - 1990

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بسم الله الرحمن الرحيم

STATEMENT

This dissertaion is submitted to Ain Shams University for the degree of Master of Science in Electrical Engineering.
The work included in this thesis was carried out by the author in the Department of Electronics and Computer, Ain Shams University, from October 1986 to October 1989.

No part of this thesis has been submitted for a degree or a qualification at any other University or Institution.

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TO:

MY FATHER

and

MY MOTHER

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- - - - - - - - - -

Dept of : Electronics and Computer Engineering

Abstract of the M. Sc. Thesis submitted by:

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Title of Thesis: "A MODEL FOR ARABIC SYNTAX AND MORPHOLOGY"

Supervisor: PROF. HUSSEIN I. SHAHEIN

Registration Date: 10/11/1986   **Examination Date:**

Abstract: This thesis presents a model for Arabic syntax and morphology . A novel representation for lexicon structure is developed. This lexicon is completely designed from syntactic viewpoint. A classification for Arabic word has been achieved and syntactic features for all types of the word has been extracted. Furthermore, an integrated powerful Arabic morphological analyzer based on production system is developed. This morphological analyzer treats most of the disadvantages of previous models suggested before.   In this model, a new technique   called EC-hashing has been proposed to accelerate the analysis process, a complete view for realization rules has been suggested, the model is designed as a production system for flexible modification, and the output from this model simplifies the job of the syntax analyzer.

For Arabic syntax , A comprehensive model has been developed. This model has been implemented using augmented transition network grammars and the main ideas of systemic grammar. Also, algorithms have been proposed to handle deeply syntactic issues such as pronoun reference and conjunction. The models for syntax and morphology is implemented using prolog on personal computer.

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REFERENCE

LIST OF RESERVED WORDS

ENGLISH	ARABIC
Noun	الاسم ا
Pronoun	الضمير
Proper noun	اسم العلم
Common noun	الاسم العام
Question articles	ادوات الاستفهام
Personal pronoun	الضمائر الشخصية
Gender	الجنس
Person	الدلالة "مخاطب-متكلم-غائب"
Number	العدد
Connection	الاتصال "متصل- منفصل "
Demonstartive pronoun	اسماء الاشارة
Reference	الاشارة " للقريب-للبعيد "
Relative pronoun	الاسماء الموصولة
Reasonability	العاقل
Definition	التعريف
Derivation	الاشتقاق
'Earab' state	حالة الاعراب
'Earab' mark	علامة الاعراب
Articles	الحروف
Transitivity	التعدى
Construction	البناء
Tense	الزمن
'Modareh'	مضارع
Emphasis	التوكيد

ENGLISH	ARABIC
Present-participle	اسم الفاعل
Past-participle	اسم المفعول
'Segha-mobalgha'	صيغة مبالغة
Infinitive	المصدر
Comparative names	اسماء التفضيل
Adjective	الصفة المشبهة
Machine name	اسم الالة
Form	الوزن
Abstract form	الوزن المجرد
Augmented form	الوزن المزيد
Weak article	حرف علة
Triliteral salem root	الجذر الثلاثى السالم
Triliteraldoubled root	الجذر الثلاثى المضعف
Triliteral weak root	الجذر الثلاثى الناقص
Triliteral hollow root	الجذر الثلاثى الاجوف
Triliteral 'mahmouz' root	الجذر الثلاثى المهموز
Predicate	الخبر
Averb	حال
Classifier	مضاف اليه
Bound sentence	جملة شرط
Object	مفعول به
Declarative sentence	الجملة الخبرية
Interrogative sentence	الجملة الاستفهامية
Relative sentence	جملة الصلة
Imperative sentence	جملة الامر

ENGLISH	ARABIC
'Mobtada'	المبتدأ
Subject	الفاعل
'Nasikh'	ناسخ
Beginning article	حرف ابتداء
Emphasizing object	مفعول مطلق
Causing Object	مفعول لاجله
Adverbal object	مفعول فيه
Vice-subject	نائب الفاعل
Causing adjective	صفة سببية
Distinction	التمييز
Exception	الإستثناء

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