شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل

PARAMETERIZED ARABIC FONT DEVELOPMENT FOR COMPUTER TYPESETTING SYSTEMS

by

Ameer Mohamed Sherif Mahmoud Hamdy

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE
in
Electronics and Electrical Communications Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Abstract

This thesis presents new approaches to Arabic font development for computer typesetting systems. In order to achieve an output quality close to that of Arabic calligraphers, we model the pen nib and the way it is used to draw curves as closely as possible using a font description language – METAFONT. Parameterized fonts are introduced to enable the drawing of whole words as single entities, this results in improved quality since the Arabic script is cursive by nature.

We utilize the true meta-design capability of METAFONT, analogous to the Computer Modern typeface families, and hence our design of Arabic letters includes a number of parameters which used to connect glyphs together, form ligatures, control kerning, and extend character lengths. We divide each letter glyph into smaller primitives that exist in multiple glyphs. Designing a primitive and then reusing it reduces design time.

We compare our method to the basic binding of glyphs using simple box and glue mechanisms that are used in most of today's word processors and typesetting systems, and also to currently existing font design technologies. Our method enables better connectivity of glyphs, hence better calligraphic quality, and more dynamic fonts, enabling more flexible typesetting. This comes at the expense of higher complexity of glyph designs. Meta-design of Arabic letters is discussed in detail through many examples, and methods of connecting glyphs to form words are also presented.

Finally, a subjective test was conducted for evaluating words produced using our parameterized font in comparison to other widely used fonts.