

Abstract:

Arabic has features that are not found in other languages. Almost all computer software programs are implemented in English and very few of them are supported by Arabic. For this reason we have developed an intelligent morphological Arabic Analyzer that can give the correct semantic of Arabic sentences and shall deliver correct grammar with text and voice. This analyzer will provide different morphological characteristics of each word in the Arabic input text and therefore will enable us to extract the syntactic characteristics of these words.

The main idea of this research is to design and build a database schema to represent the Arabic morphological and grammatical categories that includes all possible words, roots, derivations, and concatenations among them. The system and the database engine were implemented using the VB.NET. We have created an appropriate interface for the morphological analyzer for testing and experimentation purposes. The user can enter the Arabic text from 12 predefined categories (combinations), and the smart analyzer returns the morphological text within correct grammar (تشكيل) and correct semantics, and it can convert the text into voice. The realization of such a morphological analyzer requires not only an exhaustive database, but also it had adapted sophisticated techniques to appropriately exploit the database and enable the user to compose correct Arabic sentences with the right grammatical rules.

The proposed system has many useful applications especially in translation services. In addition, it can be helpful to people with visual disabilities since the system can read the Arabic text for the user, and it can be a great learning tool for non-Arabic speakers who want to learn Arabic.