Help System for Creating Educational Resources for Arabic

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ABSTRACT

In this article, the authors have discussed the implementation of a CALL system for Arabic-based resources from the automatic language processing, and the learning environment “TELA,” which attempt to bring new technological ways to call. This work presents the advantages of the computer’s use as a tool for teaching and learning the Arabic language. The first part of this thesis is the development of a set of linguistic resources, such as a multifunctional dictionary (as complete as possible), based on a multi-agent architecture and has morphological analysis tool “TELAMA.” These objectives were achieved with resources, methods and effective approaches in different parts of this research. The second part is the integration of these resources into “TELA” in order to provide teachers with interactive and more possible finished tools to generate varied and automated educational activities enabling learners to learn the Arabic language.

KEYWORDS

Arabic, Automatic Language Processing, Educational Activities, Learning Environment, Morphological Analysis Tool, Multifunction Dictionary

1. INTRODUCTION

The recent evolution of technologies of information and communication for teaching, has led the Community Computer Assisted Language Learning (CALL), to be interested in a comprehensive manner to the engineering of the multifaceted learning and distance. The CALL has benefited from the computer revolution, caused by the emergence of multimedia computers. In fact, the sites of learning online multiply. They bring a gain in terms of time and flexibility of use, in addition, a significant interactivity.

With the computer progress, the field of the automatic processing of natural language (NLP) has experienced a large growth for most of the languages. For the Arabic, the tools from the domain of NLP, have been slow to integrate in the platforms of learning languages. The number of these tools, which are put at the disposal of the CALL for offer to teachers and learners of interactive environments for learning the Arabic language, rest of our point of view, very modest and complete enough (Antoniadis, 2009). In effect, the field of this study, is very broad, there are more and more research and technologies that are concerned about the specificities of this language (Briot & Demazeau, 2001; Dichy & Farghaly, 2003; Mesfar, 2008; Mars & Antoniadis, 2011; Mars & Antoniadis, 2012; Khemakhem, Gargouri, Haddar & Ben Hamadou, 2013; Khemakhem, Gargouri, Haddar & Ben Hamadou, 2015),and which offer tools necessary for the development of its automatic processing. We then propose our environment of the Arabic TELA.

The proposed approach is based on the integration of tools NLP, mainly our morphological analyzer, multifunction dictionary and spell checker in the CALL systems for the realization automatic and semi-pedagogical applications. An idea which will bring a solution to the problems of learning platforms in conventional line.

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2. CRITIQUE OF EXISTING AND THE PROBLEM OF INTEROPERABILITY

Two problematic intersects in our work: The first is the outcome of the NLP, the second moves closer to the IT problems in the CALL. Let us start by, first, describing the problematic in NLP and subsequently in CALL.

2.1. Problem of Pre-Existing Tools NLP

The achievement of the tools NLP, according to specific objectives, is a complex and costly operation to implement. It is for this reason that it becomes paramount, benefit of language resources already developed, in order to catch up with the technological gap, in terms of content and services.

In fact, when trying to establish a tool NLP for any language from zero, as is the case of Arabic, we can take advantage of the pre-existing tools. Indeed, when looking more closely, we have found that it is very difficult, if not impossible, to exploit the existing tools for several reasons:

- Inexploitabilité of several tools because they are in the form of a prototype (or incomplete), non-portable, non-modifiable, Non-reusable and/or programed by old languages (Shaalan & Kaled, 2005). However, there are several morphological analyzers. Several studies have shown that the most used are the analyzers Aramorph, Al Khalil and BuckWalter (Bama). They have many weak points: first, they do not identify the pattern of the word which limits its use in a syntactic analysis. Then, they do not use the diacritic signs which are inserted generally to reduce the ambiguity and the number of possible solutions. Finally, the output of analysis is in the format translitéré and therefore is not exploitable directly by other applications (Dichy, Hassoun, Mouelhi & Zaafrani, 2002).
- Unavailability of most of these tools because of the lack of literature which concerns, their inexistences on the market and/or the inability to reach the filmmaker who often, is no longer interested in the field (Mesfar, 2008).
- Some tools are limited to one or two language levels and the possibility of the reuse or the extension is difficult and expensive. The limits and the imperfection that can be criticized in these tools are numerous, such as the circularity, errors, inconsistencies (Mars, 2012).
- Expensive because several are paid, with unsatisfactory results; in addition they are asking for a long time to be able to adapt to our needs, without being sure of achieving the goal, because most of the tools are made by well specific applications (Briot & Demazeau, 2001).
- Inadequacy of the amount of information that contain these tools.

2.2. Problem of Arab CALL

Computer Assisted Language Learning (CALL) is the result of development of computer tools and their integrations in the teaching of languages, except that these tools present several problems. They exist a few applications for the learning of the Arabic language, presenting several disadvantages which include:

- The interfaces are very poorly made, the absence of educational tasks (the learner can select any Level and any exercise without aid and have no purpose of learning), the limited number of available courses, the absence of automatic correction and feedback (nor automatic correction, nor aid in case of need) (Shaalan & Kaled, 2005).
- The rigidity of the design of the activity (activities are written by hand and may not be easily modified or enriched) and the rigidity of the treatment of responses (the correct answers are predefined and any difference, compared to the response of the learner, even with a space in too much or a focus in more or less, will be considered incorrect) (Briot & Demazeau, 2001).
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