

An Automatic Content Generator for Mazk

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Abstract. *Mazk is an intelligent tutor that aims to assist the student, with the support of the computer and using techniques of Artificial Intelligence, in the teaching-learning process. Currently, all content made available to Mazk is updated manually by the human tutor. Considering the increasing amount of educational materials available, this process often becomes tiring and time-consuming. In order to optimize this task, this paper demonstrates a proposal of automatic generation of content for Mazk.*

1. Introduction

Every day, an increasing number of people, in different segments, become dependent on the continuous use of new technologies, especially information and communication technologies (ICT). Devices such as mobile phones, tablets and notebooks are constantly employed in daily activities by professionals from different areas. The advancement of ICT has enabled new forms of communication, which may facilitate interaction between individuals in a society.

The role of ICTs, as well as information and knowledge, as the main inputs for the development of the productive, scientific and academic sector, is significant, constituting one of the critical success factors of these segments. ICT should be seen as an important resource for the collection, treatment and dissemination of data and information, as well as for the creation of knowledge by members of a given community.

This relevance extends to the educational context. Education experiences moments of great questioning, where it is evident the need for changes in several areas, especially in teaching practice. ICTs are key elements in this process of change, in what concerns its use as support for interdisciplinary practices, which seek to break the barriers between the disciplines seeking an approximation of knowledge as a link between all the knowledge of the various fields [Shaw and Rocha 2017].

In this bias, in the search for technological benefits in the educational scope a virtual environment was conceived to aid in the teaching-learning process. The Mazk interactive application, developed at the Federal University of Santa Catarina - Araranguá Campus, is classified as a smart tutor, aiming to establish knowledge and learning in various subjects, being updated by teachers that include materials, as well as, used as a platform of teaching students to learn about predisposed content [Mazk 2016].

These materials are distributed in the form of games, explanations, exercises and quiz (questions and answers), contemplating levels of knowledge of the user, being the degrees of difficulty of the exercises adjusted by the teacher according to the interaction of the student. Mazk measures the student's knowledge about the proposed theme and as

the student performs the tasks, the system re-evaluates its data, thus adapting the levels and contents, presenting the most appropriate information and tests [Mazk, 2016].

However, the amount of digital content has increased significantly, thus increasing the diversity of teaching resources. In this way, designing and developing educational materials takes time, not always available, from the teacher. To improve this process, we suggest the possibility of automatic generation of content by Mazk.

2. Methods and Expected Results

An Intelligent Tutor System (ITS) corresponds to a learning environment that allows the student to learn with the aid of a computer, through intelligent and automatic mechanisms for problem solving [Rauber 2016]. An ITS has some degree of autonomous decision-making in relation to its interactions with the users, being generally necessary the access to several types of knowledge and processes of reasoning [Pozzebon 2008].

The content available to the ITS is the responsibility of the human tutor, since its management depends on a set of environmental information [Palomino 2017]. The teacher performs this procedure more efficiently according to the circumstances, during the teaching-learning process [Ruela 2016].

Based on these assertions, it is realized that in an environment like Mazk, the possibility of automating this process would be of great value given the various benefits offered.

The present work is currently in the initial phase of research. A consultation with Mazk users was carried out in order to verify the acceptability of the proposal. This stage was carried out through an electronic form, with 7 questions about the theme. According to 87% of the interviewees, the inclusion of automatic content generation in Mazk is very important, since it facilitates the work of the users of the system.

These initial results raise the expectation regarding the project, given the agreement and positivity on the part of the users. In this way, it is expected that the proposed project will bring greater agility, speed, versatility and satisfaction regarding the use of Mazk for both teachers and students.

The next step concerns the study and definition of the concomitant methods to be used. From the context of the work, everything indicates for the adoption of Recurrent Artificial Neural Networks. Many recent works showed that neural networks can be successfully used in a number of tasks in natural language processing [Cho et al. 2014]. The specification and training of the network are presented as the most delicate phases of the project. This stage is expected to be completed by the middle of the second half of the current year.

At the end of this phase, the next actions are about the actual development of the application (probably in the Python programming language), testing and release for use. According to the elaborated timetable, the forecast for the system to be available is March 2019.

3. Conclusion

This short paper discusses the possibility of automatic content generation for the Mazk. Currently, the project is in an initial phase, and the research stage was concluded

together with the users, in order to obtain their opinion about its scope, context and importance. The results of this phase demonstrate a great expectation on the part of users regarding the relevance of the project.

The next step in the project, concerns the confirmation of the adoption of the concept of Recurrent Artificial Neural Network. After completing this step, we start with the effective development of the application. Once completed, the project should bring greater versatility to Mazk.

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