Editorial

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Biographical notes: Diana Pérez-Marín received her PhD in Computer Science and Telecommunications at the Universidad Autónoma de Madrid in 2007. She is a Computer Engineer at the Universidad Autónoma de Madrid since 2002. She is currently an Associate Professor in the Universidad Rey Juan Carlos in Madrid. She has published more than 40 papers in international conferences and journals, and has edited a book on *Natural Language Interaction and Conversational Agents*.

José A. León is a Professor of Text Comprehension, Knowledge Acquisition and Reading Comprehension at the Universidad Autónoma de Madrid. His work involves the theoretical study of cognitive processes in comprehension, memory and language, as well as the application of cognitive principles to educational practice. His current research covers a variety of topics including text comprehension, understanding and evaluating inferences, neurocognitive processes, developing automatic scoring technology and computational models using latent semantic analysis.

1 Introduction

In the last two decades there has been a substantive progress in automatic assessment of free texts as well as on e-assessment architecture. In particular, this special issue focuses on how visualisation of the structure of the text can help in its automatic assessment. Six studies are reviewed to gather several approaches from different languages such as Japanese, Spanish, German or English. The aim of this special issue is twofold: on the one hand, this special issue is intended as a reference for authors who are investigating into the available techniques and tools for free-text automatic evaluation, e-assessment; and, on the other hand, this issue also intends to provide a multidisciplinary approach presenting works carried out by researchers in different fields in order to visualisation in a graphical representation of the text, use of concept maps, visual heuristic searches in

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visual information retrieval interfaces (VIRIs), hypertext documents or visual alignment approach.

2 Contributions

In the first paper entitled 'Ascertaining and graphically representing the logical structure of Japanese essays', Ishioka presents a new technique that uses a graphical representation of the text based on the use of end-of-sentence hints and demonstrative pronouns as indicators of the structure without relying on conjunctions.

In the second paper entitled 'Service-oriented flexible and interoperable assessment: towards a standardised e-assessment system', AL-Smadi and Guetl propose a service-oriented flexible and interoperable architecture for futuristic e-assessment systems, and how such architecture can foster the e-assessment process in general and the free-text answers assessment in particular.

In the third paper entitled 'The concept map-based assessment system: functional capabilities, evolution, and experimental results', Anohina-Naumeca, Grundspenkis and Strautmane present a free-text assessment system based on the use of concept maps. On the basis of concept maps these authors development an intelligent assessment system that promotes students' knowledge self-assessment and supports teachers in improvement of study courses through systematic assessment and analysis of students' knowledge.

In the fourth paper entitled 'The representation of polysemy through vectors: some building blocks for constructing models and applications with LSA', Jorge-Botana, León, Olmos and Escudero approach the problem of multiplicity of word meanings by using networks of linguistic semantic models and visual heuristics using LSA. In this paper, these authors present networks that providing evidence that polysemous words have separate representations for each sense only in the presence of its linguistic context. They also present an example of how these mechanisms contribute to supporting visual heuristic searches in VIRIs.

In the fifth paper entitled 'Using latent semantic analysis to enhance the comprehensibility of hypertext systems', Madrid and Cañas review the use of hypertext documents to address the problem of knowledge acquisition and information search. This paper presents a number of cognitive models that explain how learners navigate and comprehends hypertext documents. In addition, a number of procedures are described that uses latent semantic analysis (LSA) free-text tools in order to assess and improve their usability and comprehensibility.

Finally, in the sixth paper entitled 'Integrating parallel analysis modules to evaluate the meaning of answers to reading comprehension questions', Meurers, Ziai, Ott and Bailey discuss a content-assessment approach focusing on reading comprehension exercises using an annotation-based natural language Processing architecture. In particular, Meurers et al. described how the context, meaning-based interaction in the foreign language is widely recognised as crucial for second language acquisition. For intelligent language tutoring systems to support such activities, they thus must be able to evaluate the appropriateness of the meaning of a learner response for a given exercise. They show how an annotation-based NLP architecture implementing this idea can be realised and that it successfully performs on a corpus of authentic learner answers to reading comprehension questions.

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