
Special Issue on Advanced Practices in Web Engineering 2021

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Editorial

Novelty in Web Engineering arises when this area is jointly applied with other emerging and innovative ones. The transference of Web Engineering research results to industrial applications is quick due to the extensive domains of applications that this area of knowledge has. Each year there are more and more users appealing for it. Consequently, the users' expectations and demands on this area are higher and higher. Thus, the ability of researchers and developers to adopt advanced practices and adapt to innovative approaches within Web Engineering has a tremendous and direct impact on society.

This special issue contains a selection of advanced practices on Web Engineering, according to their relevance and novelty. Six studies have been considered as highly relevant for the convenient development of actual web-based applications. Such selection has been organized into three main areas based on the focus of each study. These areas are: Software Development, Applied Technologies, and Linguistic Approaches.

Software Development

Regarding Software Development, the chosen studies focus on semi-automatic software generation and lifecycle activities measurement.

We begin with the need to generate web applications systematically. In this context, the paper presented by *Ramos-Vidal et al.* has proposed a

Software Product Line (SPL) approach for the semi-automatic generation of Digital Libraries (DL). The authors aim to allow developers to specify which DL features are required to define the data model and generate the source code. Consequently, authors have found a way of saving efforts when developing an SPL.

Along with the development of web applications, Web Engineering is enriched by applying software methodologies. Measuring the development activities allows to optimize the use of resources and reduce costs. In this regard, the research conducted by *Meidan* et al. describes a solution to support the measurement activities throughout the process lifecycle. Their approach allows organizations to define, manage and improve their processes. More precisely, it has been proven to support and guide the engineers in the complete and operational definition of the measurement concepts through several industrial experiences.

Applied Technologies

The second selected advanced area that modern web applications should consider is Applied Technologies. That is, making more technologies available in the context of Web Engineering. Selected studies of applied technologies focus on the Voice user interfaces and Smart Contracts.

On the one hand, Voice Assistants (VAs) are being used highly frequently and highly available in the consumer sector. They are also projected to do exceptionally well in enterprise applications worldwide. However, the VA adoption rate of internet users differs among European countries and also in the global view. In the paper presented by *Klein* et al., authors describe an intercultural study of technology-friendly users from Germany and Spain. According to their results, despite the cultural differences, they found that nearly the same amount of intensive VA usage is found in both technology-friendly user groups. Moreover, both countries' participants showed very similar tendencies, frequency of use, privacy concerns, and demand for VA.

On the other hand, Smart contracts are intended to automatically execute, control, or document legally relevant events and actions. Software engineers must deal with trustworthy collaborative processes to ensure the quality of smart contracts in all phases of the smart contract lifecycle. The criticality of smart contracts in business environments forces software engineers to represent smart contracts in an intuitive and easy-to-use language, independent of the blockchain platform and oriented towards software quality assurance. In this meaning, *Sánchez-Gómez* et al. present an innovative component. The

first outline of a UML-based smart contract meta-model that would allow software engineers to achieve these objectives

Linguistic Approaches

The third group of studies for this special issue focuses on Linguistic Approaches. Two works have generated knowledge regarding the use of natural language within the Web Engineering field.

As the number of web pages, services, and systems keeps growing, it is more and more relevant to have tools capable of understanding their content and classify them. This is the purpose of the manuscript by *Gupta and Bhatia*. These authors proposed a Web Page Classification that assesses predefined labels for classifying web pages using a proper subset of relevant features. To achieve such a goal, they describe an ensemble Knowledge-Based Deep Inception (KBDI) approach for web page classification. Their experimental evaluation has proven their approach to provide momentous improvement compared to other transfer learning perspectives for web page classification tasks.

The last study gathered in this special issue deals with Ontology Engineering and its costs estimation. Ontologies are controlled vocabularies that serve as a schema for specifying the terms of a domain of interest. They serve as the semantic data model for knowledge management, information retrieval, information integration, semantic web applications, and intelligent information systems *Malik and Jain* propose an effort estimation methodology for ontology engineering using Fuzzy Logic, which has been named *F-ONTOCOM*. Their approach addresses the fuzziness involved in these estimations. The authors have conducted an experimental evaluation and proved that their approach improves the accuracy of cost estimation baselines.

