

Foreword and Editorial

International Journal of Software Engineering and Its Applications

We are very happy to publish this issue of an International Journal of Software Engineering and Its Applications by Science and Engineering Research Support soCietY and ICT Platform Society.

This issue contains 5 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

This work “Automatic Code Generation for Web Services Composition Based on a Formal Specification” provides a solution for the formal modeling and automatic generation of the composition of web services. Indeed, many proposed approaches to formalizing and modeling of web services, however, these approaches are partial solutions to the problem of development of safe composition. The specifications generated are too abstract to be directly supported by an implementation language. These specifications correspond to the conceptual level considered development. A refinement stage (coding) of these specifications is essential.

The reliability of safety-critical systems is of concern, a failure of which would result in injury, death, damage to the environment or financial loss. Such systems have evolved from being largely mechanical to computer driven. The approach to analysing failure of mechanical or hardware architecture of the system is well established in literature and practice. Although the hardware architecture could be adequately analysed for failure using traditional safety analysis techniques, the manner in which the software architecture is to be analysed for failures is fuzzy. This creates additional concern to the reliability of contemporary safety-critical systems. This paper “Software Failure Analysis using FMEA” defines an approach to analysing software failure at class diagram using one of traditional safety analysis techniques, failure modes and effects analysis (FMEA). It also demonstrates how to apply the approach to analysing software failure.

A problem of searching the regularities (properties) on the basis of mapping results of the objects descriptions is studied on a subset of features on a numerical axis. In this paper “Calculation of the Generalized Estimations in Sets of Features and their Interpretation” a method is proposed for partitioning the features into sets by constructing graphs of connectedness of features. Generalized estimates by each set of features are interpreted as a latent quantitative feature for describing objects in the two-class recognition problem. The detected value characterizing regularity by the latent feature is regarded as a value of a linguistic variable and interpreted.

Software reverse engineering is an important process for software maintenance and upgrading. The process includes analyzing existing software to identify its structural components and the relationships between them. Presenting software components, relationships, and data to the reverse engineer visually is considered as essential and vital technique. This paper “Evaluating the Role of Software Visualization Techniques as Assistant Tools in Software Reverse Engineering” explores and evaluates the role of software visualization techniques in software reverse engineering process. An evaluation model is constructed, which consists of quantitative and qualitative measurement sets.

Machine learning is the rapidly growing technology in the field of almost all recent technologies in the market. As it is growing from day to day, the utilization of these techniques and algorithms are also increasing. These algorithms can be used for various applications like mines, health, oil and gas, natural calamities and other applications. In the current paper “Machine Learning Applications: An Extensive Review”, the representation of machine learning, evolution of machine learning models, types of machine learning techniques and its applications are done. The set of areas where the machine learning techniques and algorithms are discussed in detail.

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