
Editorial

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Biographical notes: Saoussen Krichen is currently the Vice President of the Université de Tunis, and a Full Professor in Quantitative Methods. Her research interests include supply chains management, multi-objective optimisation, dynamic optimisation, game theory, decision support systems, machine learning and artificial intelligence. She served as the Director of the Doctoral School of Institut Supérieur de Gestion de Tunis (Université de Tunis) from 2016–2018. She published numerous books in Wiley, Taylor & Francis and ISTE and more than 150 papers in impacted journals and international conferences.

Hajer Ben-Romdhane is an Associate Professor in Business Computer Science at the Université de Tunis (University of Tunis), Tunisia, and a member of Larodec Laboratory (Higher Institute of Management of Tunis). She received her PhD in Computer Science from the University of Tunis, in 2016. Her current research interests include modelling of complex and dynamic optimisation problems, multi-objective decision making, and the design and application of evolutionary algorithms and other bio-inspired systems to real problems. She has authored and co-authored many international publications including book chapters, articles in peer-reviewed journals with impact factors and papers in international conferences. She guest-edited several special issues and has served as a Publication Chair of several conferences held in Tunisia in the few last years.

Computational intelligence is a powerful methodology involving computing that exhibits an ability to learn and/or deal with new situations. It has attracted great attention of researchers over the years due to its applicability to different fields (such as in financial forecasting, industrial, scientific and social media applications) and interesting computational aspects.

This issue focuses on both practical and theoretical aspects of computation and intelligent algorithms. Majority of papers in this issue concerns methods of knowledge representation, the family of evolutionary algorithms, and other techniques combined in solutions of different data mining tasks. The special issue's overall aim is to provide a dedicated venue for participants of the Workshop on Computing, Management, and Decision Making (CMDM), held in February 20–22, 2017 in Tozeur, Tunisia, to present their contributions, and thus to highlight the breadth and depth of efforts to improve the efficiency and effectiveness of this area of research. To provide readers with a quick overview of the selected papers, a brief summary for each of them is presented below:

- ‘MC4.5 decision tree algorithm: an improved use of continuous attributes’

In this paper, the authors investigated the decision trees as classification techniques, and proposed a modified version of the C4.5 algorithm, namely MC4.5. Their proposal aims to overcome the weakness of C4.5 algorithm when dealing with continuous attributes. In the new algorithm, the statistical mean is used as a new way of choosing the threshold value. The conducted empirical study, using various datasets, showed that the proposed algorithm leads to smaller decision trees with better accuracy when compared to the C4.5 algorithm.

- ‘Solving flexible job-shop problem with sequence dependent setup time and learning effects using an adaptive genetic algorithm’

Most job-shop scheduling researches in the literature ignore the setup times or consider them as a part of the processing time. However, in many real-life situations such as chemical, printing, pharmaceutical and automobile manufacturing, the setup times are not only often required between jobs, but they are also strongly dependent on the job itself and on the previous job that ran on the same machine. To address this problem, the authors studied the flexible job-shop problem with sequence-dependent setup times, and with learning considerations. Makespan is specified as the objective function to be minimised. To solve this problem, a new adaptive genetic algorithm called AGA is proposed. The experimental study shows that AGA is very promising with regards to state-of-the-art algorithms.

- ‘Contributions to the automatic processing of the user-generated Tunisian dialect on the social web’

Arabic dialects are spoken variants of the Arabic language that are used by Arab people in their everyday communication. They are informal and varied, differing from one country to another and differing from the Modern Standard Arabic in several aspects. With the growing use of social media in the Arab world, these various dialects are rapidly spreading on the web, leading to a growing interest from NLP researchers. In this paper, the authors focused on the automatic processing of the user-generated Tunisian dialect (TD) on the social web and proposed an approach-based TD identification and TD transliteration, for the automatic generation of various TD language resources (LRs), that are useful for its study and for any NLP research work dealing with this dialect

- ‘A co-evolutionary decomposition-based algorithm for the bi-level knapsack optimisation problem’

Bi-level optimisation problems (BOPs) are a class of challenging problems with two levels of optimisation tasks. These problems are able to model a large number of complex real-life situations. This work presents a co-evolutionary decomposition-based (CODBA) algorithm for solving the bi-level knapsack problem (KP). The authors applied a CODBA-II scheme to solve the bi-level KP in which new bi-level formulation of the KP variants are defined. Besides, they reported the results of a comparative study between CODBA-II, CODBA, COBRA, and a naive hierarchical evolutionary algorithm for solving the bi-KP.

- ‘Web service selection based on QoS and user profile’

This paper studies the selection of the best web services according to users’ query. The quality of service (QoS) is argued to have an important role in the web service selection process, it aims to classify the web service that have same functionalities. Accordingly, the authors focused on different concepts of the QoS. A new approach is proposed that is composed by two services; its primarily role is to select the best web service with regards to users’ query and profile. The new approach provides a better knowledge of the user behaviour as users can participate in research design and construction. The experiment shows that the proposed method can accurately recommend the needed web services in a faster time.

- ‘An effective genetic algorithm for solving the capacitated vehicle routing problem with two-dimensional loading constraint’

The symmetric capacitated vehicle routing problem is an important variant of the routing problem where two-dimensional weighted items are to be carried on vehicles. The objective of this problem, namely 2L-CVRP, consists in designing a set of trips, starting and terminating at a central depot, minimising the total transportation cost with a homogenous fleet of vehicles. This study proposes a new genetic algorithm to deal with the 2L-CVRP using an ordered crossover operator. The experimental study carried out on known benchmark instances and comparing the proposed method to existing approaches from the literature showed that the proposed algorithm is competitive in terms of solutions quality.

- ‘A multi-level study for trust management models assessment in VANETs’

This work discusses the need of three trust levels to preserve the information trustworthiness in vehicular ad hoc networks. The authors claimed that the decision making can be established in different manners depending on the applications requirements, and that a self-adaptive trust management scheme can be developed to consider the specifications of VANETs’ applications. The contributions of the current work are as follows: an investigation of the performance of data perception trust, communication trust and data fusion trust to cope with the security attacks in order to reduce their effects on V2X communications. Then, a comprehensive study of trust management in VANETs is provided in order to identify their challenges. And finally, they give some insights about a self-adaptive trust management scheme that aims at handling the specifications of each class of VANETs’ applications.