
Editorial

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Biographical notes: Nizar Rokbani is currently an Assistant Professor at the Institute of Applied Sciences and Technology of Sousse. He earned an Engineering Diploma and a PhD in Electrical Engineering respectively from the National Engineering Schools of Tunis and Sfax. His research interests include applications of intelligent techniques such as swarm intelligence, computational intelligence, fuzzy logic, evolutionary algorithms to robotic systems and industrial processes. He is an IEEE senior member serving in several volunteering positions with Tunisia Section, SMCS and OES Chapters. He is the chair of IEEE Robotics and Automation Society Tunisia Chapter (2017).

The CoDIT'16 conference is the third (3rd) edition in the series of the International Conference on Control, Decision and Information Technologies was conducted during 6–8 April 2016 at Saint Julian's, Malta. Its purpose is to be a forum for technical exchange amongst scientists having interests in control, optimisation, and decision, all areas of engineering, computer science and information technologies.

Computational intelligence (CI), has been an exciting field of research with a large panel of applications in sciences and engineering. Control, optimisation, decision making are key issues all areas of engineering fields. CI techniques showed efficiency in solving such problems control systems, or driving control applications. CI refers to a large panel of methods and techniques including swarm intelligence, neural networks, fuzzy and neuro-fuzzy, heuristics and bio-inspired computational approaches such as ACO, PSO.

This special includes selected papers where the contributions are essentially in the field of computer science for control and decisions using CI techniques and research works including real industrial applications. The special issue presents also a collection of selected and extended papers from the International Conference on Control, Decision and Information Technologies, CODIT'2016. These papers presented in Codit'2016 have been expanded and arranged in regards to the reviewer comments, feed back and recommendations. The contents of the selected articles are described briefly introduced as follows:

The paper titled 'Tardiness minimisation heuristic for job shop scheduling under uncertainties using group sequences' by Zakaria Yahouni, Nasser Mebarki and Zaki Sari proposes a new decision aid criterion for industrial scheduling problems that fits best the real state of a shop and based on a greedy heuristic that anticipates the maximum tardiness in a job shop scheduling environment.

In the paper titled 'Enhanced approach to cascade reconfiguration control design' by Dušan Krokavec and Anna Filasová, the authors presented a method for reconfiguration

to retain fault tolerance in control of linear continuous-time systems with system dynamics faults in which a reference model output is followed when a fault occurs, while the nominal control loop structure is kept untouched and the controllers with nominal parameters remains a part of the reconfigured control loop scheme.

The paper titled ‘Skewness map: estimating object orientation for high speed 3D object retrieval system’ by Vicky Sintunata, Kurumi Kaminishi and Terumasa Aoki proposes a new method for 3D object retrieval system called Skewness map. Skewness map can estimate the orientation of the object and select a few representative images accurately from a database; results are confirmed using an experimental data set.

The paper titled ‘Discovering dependencies between domains of redox potential and plant defence through triplet extraction and copulas’ by Dragana Miljkovic, Nada Lavrač, Marko Bohanec and Biljana Mileva Boshkoska proposes a new approach to discovering dependencies between different biological domains based on copula analysis of literature mining results with a focus on dependencies between literature from the domains of plant defence response and redox potential.

In the paper titled ‘Ant colony optimisation combined with variable neighbourhood search for scheduling preventive railway maintenance activities’ by Safa Khalouli, Rachid Benmansour and Saïd Hanafi, the authors applied a variable neighbourhood search (VNS) and an ant colony optimisation (ACO) for railway infrastructure maintenance scheduling, they also develop a hybrid approach combining ACO with VNS. The proposed method was tested using a data set of randomly generated instances and compared to related works.

The paper titled ‘A two-stage hybrid method for the multi-scenarios max-min knapsack problem’ by Thekra Al-Douri and Mhand Hifi proposes a two-stage hybrid method in order to approximately solve the multi-scenarios max-min knapsack problem. The proposed method is based upon three complementaries stages:

- 1 the building stage
- 2 the combination stage
- 3 the two-stage rebuild stage.

The proposed method essentially combines initial population solutions in order to provide solutions of high qualities. Results are compared to state of art approaches and showed the pertinence of the proposal.

In the paper ‘Numerical program optimisation by automatic improvement of the accuracy of computations’ by Nasrine Damouche, Matthieu Martel and Alexandre Chapoutot, the authors developed a tool which corrects round-off errors automatically by transforming programs based on static analysis by abstract abstraction, operates on pieces of code with assignments, conditionals and loops. The proposal is interesting for any for numerical software.

The paper titled ‘Hybrid approach using multi-criteria methods and mathematical programming for outsourcing logistic problem’ by Nesrine Bidani and Hela Moalla Frikha proposes a multi-criteria approach which hybrids objective methods used in multi-criteria decision aid. The proposed method is integrated in software application to choose a transport provider within the Tunisian Chemical Group (GCT) and determine the number of providers and optimal transported quantities.

The paper titled ‘Local voting protocol step-size choice for consensus achievement’ authored by Konstantin Amelin, Natalia Amelina, Yury Ivanskiy and Yuming Jiang addresses a problem of load balancing in a multi-agent network system of different computing nodes. The problem is formulated as consensus achievement problem and solved via local voting protocol of a multi-agent system.

The paper titled ‘Application of multi-verse optimiser-based fuzzy-PID controller to improve power system frequency regulation in presence of HVDC link’ by Nour EL Yakine Kouba, Mohamed Mena, Mourad Hasni and Mohamed Boudour presents the design of a novel optimal fuzzy-PID controller based multi-verse optimiser (MVO) for load frequency control (LFC) of a two-area power system interconnected via high voltage direct current (HVDC) transmission link. The paper includes also a comparative study of performance of proposed controller to fuzzy logic and conventional PID controllers.

The paper titled ‘EGSA: a new enhanced gravitational search algorithm to resolve multiple sequence alignment problem’ by Elamine Zemali and Abdelmadjid Boukra proposes a sequence alignment algorithm based on gravitational search algorithm (GSA) where a mechanism based on simulated annealing concept is used to avoid local optima convergence. Performances analysis of the proposed algorithm including a comparison with state of art methods is performed using the BALiBASE benchmark database.

The Guest Editor would like to thank all the authors for submitting their manuscripts in this special issue and for their cooperation in positively addressing reviewers’ and editors comments. We would want to acknowledge the reviewers for their efforts and contributions in reviewing the papers and providing constructive comments to the authors.

Special regards go the ‘Inderscience’ editorial team for their abnegation and support in handling this special issue.

Finally, the Guest Editor would like to address a special thank the Editor-in-Chief of *Int. J. Intelligent Engineering Informatics (IJIEI)*, Prof. Ahmad Taher Azar (Benha University, Egypt) for his great help and support during the whole editing process and the publication of this special issue.