

Introduction to special issue on ‘intelligent computing and adaptive systems’

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Received: 24 October 2017 / Accepted: 24 October 2017 / Published online: 2 November 2017
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This special issue of *Innovations in Systems and Software Engineering: A NASA Journal* is devoted to selected contributions from the 4th International Conference on Advanced Computing, Networking and Informatics (ICACNI 2016), organized by Centre for Computer Vision and Pattern Recognition, National Institute of Technology Rourkela, India; Faculty of Engineering and Technology, Liverpool John Moores University, UK; College of Engineering, Mathemat-

ics and Physical Sciences, University of Exeter, UK; and Faculty of Science, Liverpool Hope University, UK during 22–24 September 2016. The conference commenced with a keynote by Prof. Bhargab B. Bhattacharya (FIEEE, FNAE, INAE Chair Professor, Indian Statistical Institute, Kolkata, India) on ‘Digital Geometry and its Applications to Orthopaedic X-Ray Image Analysis’.

While more than 500 articles across different tracks of the conference were received, 112 articles were finally selected for presentation and publication by *Advances in Intelligent Systems and Computing* series of Springer as volumes 518 and 519. The proceedings highlight two invited articles: ‘How meta-heuristic algorithms contribute to deep learning in the hype of big data analytics’ by Fong et al. [2] and ‘Using games to solve challenging multimedia problems’ by Marques [4]. The conference showcased technical talks by Prof. Robert Bestak, Czech Technical University, Czech Republic; Prof. Amitava Chatterjee (FIETE, FIE(I), SMIEEEE), Jadavpur University, Kolkata, India; and Prof. Sankhayan Choudhury, Calcutta University, Kolkata, India. The conference was successful in identifying some inspiring research works with possible commercialization and socio-economic effects.

The conference was able to bring together academics, researchers, as well as industrial practitioners to share and disseminate recent cutting edge research in the topics related to the conference. In line with this event’s theme, it is planned to have the same titled conference on yearly basis in different venues. Hence, we expect that subsequent events would also draw many papers and produce quality special issues in the recognized journals.

Out of 112 articles presented and published in the proceedings of the conference, some fine works were invited for submission after extension and these were peer-reviewed for inclusion in the *Innovations in Systems and Software*

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Engineering: A NASA Journal, Springer. In addition to the invited papers, an open call was also issued for this special issue as a result of which a total of 38 submissions were received for this special issue entitled ‘*Intelligent Computing and Adaptive Systems*’. The final decision for the inclusion of six papers in this special issue, brief summaries of which are provided below, has been reached strictly based on the outcome of the rigorous two-stage peer-review process.

The first article titled ‘A semiautomatic approach for segmentation of carotid vasculature from patients’ [3] proposes a semiautomatic geodesic path propagation algorithm based on fuzzy distance transform to generate digital cerebrovascular phantoms from the patients’ CT angiogram (CTA) images. This addresses the challenge in segmentation of vasculature specific to patients.

The second article titled ‘TelePatch: a middle layer for screening device fragmentation’ [5] describes an intermediate background app, named as TelePatch, which resides between the application and the core android framework, achieving device fragmentation. The proposed app TelePatch generates a map between the intended calls with actually supported calls.

The third article titled ‘A dynamic model for short-term prediction of stream attributes’ [6] puts forward a generic visualization of a complex system and thereafter a linear regression-based dynamic model for short-term prediction of stream attributes. The proposed model finds its application in data stream analytic like stock data prediction.

The fourth article titled ‘A framework for business process modeling by QoS-based pruning’ [1] investigates to redesign business process model based on QoS. An algebraic framework is deployed which permits integrated multidimensional assessments of QoS factors for choosing path from the reduced space towards derivation of an optimal business process model by selectively choosing the QoS values. The proposed methodology ensures non-removal of any superior business process model while deriving a solution.

The fifth article titled ‘Automated classification of software issue reports using machine learning techniques: an empirical study’ [7], as its title suggests, attempts to experiment whether different classification algorithms (viz. naive Bayes, linear discriminant analysis, k -nearest neighbours, support vector machine (SVM) with various kernels, decision tree, and random forest) can succeed to classify software issue reports from open-source projects. The attempt is significant as machine-supported classification of software issues can save a lot of developer time, and money too.

The sixth article titled ‘Small multiples Euler-time diagrams for software engineering’ [8] addresses the challenge of identifying, visualising, and monitoring set relationships in a software development over a period of time. The article proposes a novel decision-support visual method to generate

small multiples Euler-time diagram, a set visualization represented in small multiples over time. The proposed model can be customizable based on different organization requirements.

The objective of this special issue has been to make available recent results and report in-progress research in the field, and we much expect that this publication will serve as an important reference source to many students, researchers, and academics in their educational, research, and professional activities in future. We are very much hopeful that readers will find the articles scholastically interesting and of relevance to recent states of research in respective domains. As guest editors, we would like to express our gratitude to Editor-in-Chief, Prof. Michael G. Hinchey, for extending to us the opportunity to host this special issue and for his constant support and highly valued advices to maintain high quality. We also thank the authors for their contributions, including those whose papers could not be included in this special issue. To conclude, we express our deepest gratitude to the expert reviewers for their insightful reports on the submissions.

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