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PREFACE

Special issue on The 17th Annual UK Workshop on Computational Intelligence

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The 17th Annual UK Workshop on Computational Intelligence (UKCI2017) took place in Cardiff on 6–8 September 2017. The UKCI workshop series is the premier UK event for presenting leading research and development on all aspects of Computational Intelligence. The aim of UKCI2017 was to provide a forum for the academic community and industry to share experiences of advancing and utilizing computational intelligence techniques, to discuss new trends and to exchange views and ideas.

UKCI2017 was hosted by the Cardiff University, UK, with the support of the workshop's organizing and programme committees, keynote speakers, reviewers and, most importantly, authors. Forty-two papers on recent progress in computational intelligence techniques and applications were selected and presented. From these, authors of nine top-ranked papers, selected by the international programme committee and reviewers, were invited for submission of substantially extended versions to be considered for publication in a special issue of Soft Computing, dedicated to recent advances in computational intelligence algorithms and applications. From these papers, ten are finally accepted for this special issue. They reflect both the most recent advances on computational intelligence and their applications.

Alrehamy and Walker present in the paper, entitled Exploiting Extensible Background Knowledge for Clustering-based Automatic Keyphrase Extraction "Exploiting Extensible Background Knowledge for Clustering-based Automatic Keyphrase Extraction", a clustering-based unsupervised keyphrase extraction method is developed to address the coverage limitation problem by using an extensible approach that integrates an internal ontology (i.e. WordNet) with other knowledge sources to gain a wider background knowledge. Li et al. propose in the paper entitled "MOEA/D with Chain-based Random Local Search for Sparse Optimization", a set of nondominated solutions with different sparsity levels via multi-objective evolutionary algorithms (MOEAs) is established. A new MOEA/D version is developed specifically for sparse optimization, in which a chain-based random local search (CRLS) is employed for optimizing subproblems with various sparsity levels. In the paper entitled "Correlation Prediction with Fuzzy Connected-Triples", Li et al. propose to create a novel data-driven approach for inter-variable correlation prediction by exploiting the concept of connected-triples.

Adama et al. propose in the paper "Human Activity Learning for Assistive Robotics using Classifier Ensemble" a human activity learning system for application in assistive robotics. In the system, an RGB-Depth sensor is used to acquire information of human activities and a set of statistical, spatial and temporal features for encoding key aspects of human activities that are extracted from the acquired information of human activities. Research reported in "Constructing and validating word similarity datasets by integrating methods from psychology, brain science and computational linguistics", by Wan et al., presents a novel multidisciplinary method for constructing and validating word similarity gold standard datasets. They confirm that the proposed method adopts three different disciplines, i.e. psychology, brain science and computational linguistics, to validate the soundness of the constructed datasets. In the paper entitled "Fuzzy C-means Based Coincidental Link Filtering in Support of Inferring Social Networks from Spatiotemporal Data Streams", Zhang and Shen present an improved approach by the use of the popular fuzzy c-means method to reinforce the clustering of coincidental links in an emerging social network derived from spatiotemporal data.

UKCI2017 subsumed as its special sessions the Workshop on Autonomous Learning from Big Data for Green Transportation, which was mainly sponsored by the Sêr Cymru National Research Network for Low Carbon, Energy and Environment Research Development Fund in the UK. As a key sector of the green economy, a more sustainable direction for transportation is to shift activity away from

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high-carbon modes (i.e. road and air) to rail and public transport. This requires the deployment of effective and efficient transport operation and management systems. These special sessions were organized in order to address such problems and potential solutions, enabled by computational intelligence technologies. This special issue also includes the following substantially expanded papers that were selected from the work presented at these sessions. In particular, Xu et al. propose a multi-objective optimization mathematical model to solve the N–N Task-Resource Assignment problem in CLN under demand uncertainty in the paper entitled "A N–N Optimization Model for Logistic Resources Allocation with Multiple Logistic Tasks under Demand Uncertainty". Research reported in "Timetable optimization for single bus line involving fuzzy travel time" by Li et al. presents a bi-objective optimization model is established to minimize the total travel time for all trips along the line and the total waiting time for all passengers at all stops, in which the bus travel times are considered as fuzzy variables due to a variety of disturbances such as weather conditions and traffic conditions. In the contribution entitled "A Minimum-Cost Model for Bus Timetabling Problem", Yu et al. explore a minimum-cost timetabling model is proposed, in which the total operation cost consists of the cost for a fixed setup and that for variable fuel consumption. In the paper "Chinese Microblog Users' Sentiment Based Traffic Condition Analysis", Cao et al. develop a semi-supervised learning method which uses the social network data instead and analyses the traffic condition based on users' sentiment in Chinese Microblog.

This exciting collection of such excellent works could not have been possible to be shared with the research community without the active and encouraging support of Professor Vincenzo Loia, the Editor-in-Chief and Springer's Soft Computing journal team to deliver this special Issue. It would not have been possible without the hard work and professional support of the UKCI 2017 programme committee and the peer-reviewers of papers presented at the workshop and in this special issue. We are very grateful to them all. We would also like to acknowledge the continuous support of the authors who have contributed to this special issue. We hope that this special issue brings to readers a great selection of research contributions that mark the progress and promote scientific excellence in computational intelligence and applications.