Soft Computing Techniques in Data Mining

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This special issue encompasses eight papers devoted to the recent developments in the field of Data Mining. The issue originated from presentations of the special issue “Soft Computing Techniques in Data Mining” at “10th Internacional Conference on Intelligent Data Engineering and Automated Learning (IDEAL 09)” held in Burgos (Spain), September 23–26th, 2009, together with invited papers from well recognized researchers in the topic. Ten papers were submitted to the special issue, every paper was revised by at least three referees and finally seven of them were accepted according to the referees’ evaluations.

This special issue is focused on soft computing techniques in data mining. The submissions embrace theoretical models dealing with data mining.

The first paper, “Design of Linguistically Interpretable Fuzzy Rule-Based Classifiers: A Short Review and Open Questions” is devoted to the interpretability of fuzzy rule-based classifiers. Ishibuchi et al. discuss on the linguistic interpretability of fuzzy rule-based classifiers to demonstrate that there are a number of open questions with respect to the interpretability of fuzzy rule-based classifiers.

The second paper, “Learning Discriminant Functions based on Genetic Programming and Rough Sets” is devoted to unsupervised learning based on genetic programming. Hong et al. present a scheme based on rough set theory
and genetic programming to learn discriminant functions from general data containing both nominal and numerical attributes.

The third paper, “A Fuzzy Approach to the Linguistic Summarization of Time Series” is devoted to data summarization. Castillo-Ortega et al. introduce a new approach to linguistic summarization of time series based on the use of a fuzzy hierarchical partition of the time dimension and the evaluation of quantified sentences.

The fourth paper, “A Gene Expression Programming Algorithm for Multi-Label Classification” is devoted to Multi-Label Classification. Ávila et al. extend the gene expression programming paradigm to multi-label classification problems and use a niching technique to guarantee that the population includes functions for each existing class.

Three other papers are related to the application of soft computing techniques to different data mining problems.

The first one, “Future performance modeling in athletism with low quality database-based genetic fuzzy systems” is focused on the configuration of athletics teams. Palacios et al. apply a genetic fuzzy system to mine a list of linguistic rules that model the expertise of a coach from a database with low quality data.

The second one, “Investigation of the eTS Evolving Fuzzy Systems Applied to Real Estate Appraisal” is focused on Real Estate Appraisal. Lasota et al. apply an evolving Takagi-Sugeno algorithm to learn models for premises valuation come from the cadastral system and the registry of real estate transactions.

The third one, “KEEL Data-Mining Software Tool: Data Set Repository, Integration of Algorithms and Experimental Analysis Framework” is focused on KEEL Data-Mining Software. Alcalá-Fdez et al. present three new aspects: KEEL-Dataset, guidelines for including new algorithms in KEEL, and a module of statistical procedures.

Finally, as Guest Editors of this special issue, we would like to thank all the authors for their contributions and the referees for their outstanding cooperation and constructive feedback.