Call for papers

Soft Computing, Special Issue on

Evolutionary and Metaheuristic-based Data Mining (EMBDM)

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Aims and scope of this special issue:

As can be read in the webpage of the metaheuristics network (http://www.metaheuristics.org), a **metaheuristic** is a set of concepts that can be used to define heuristic methods that can be applied to a wide set of different problems. In other words, a metaheuristic can be seen as a general algorithmic framework which can be applied to different optimization problems with relatively few modifications to make them adapted to a specific problem. Examples of metaheuristics include evolutionary algorithms, simulated annealing, tabu search, iterated local search, and ant colony optimization. Metaheuristics have been widely used to solve different combinatorial (and numerical) optimization problems, with the goal of obtaining a very good solution (but perhaps not the optimum) to NP-complete problems in which exact search methods are intractable even for small problem sizes.

Machine learning-based data mining techniques (decision trees, bayesian networks, rule based systems, neural networks,....) aim to build a model from past experience (historical data), that later will be used to

predict the output of new cases or to get some insight by using the model as a descriptive tool. Greedy algorithms (hill climbing, gradient descent, …) are perhaps the most commonly approach to the design of machine learning algorithms because their good tradeoff between the quality of the obtained model and the amount of resources (mainly CPU time) they need. However, it is also well known that the use of more complex (in terms of resources) approaches often yields more accurate models. Specially the evolutionary algorithms have been used widely in different tasks of Data Mining: classification, clustering, dependence modelling, regression, time series, discovery of comprehensible and interesting knowledge, scaling up for very large databases, etc. Recently other metaheuristics as ant colony optimization, and tabu search among others, are being used in this area.

From the specific literature we can observe that the interaction between data mining techniques and evolutionary algorithms and other metaheuristics has been a really profitable marriage during the last decade, being nowadays one of the hottest topics on computer science research. The goal of this special issue is to collect a set of papers showing original and recent research about the following the use of metaheuristics in the following (not exclusive) list of data mining areas:

a.. Data preprocessing (variable/feature selection, instante selection, discretization, …).
b.. Rule based systems.
c.. Classification and numerical prediction.
d.. Neural networks and fuzzy-neural networks.
e.. Genetic fuzzy systems.
f.. Hard and soft clustering.
g.. Association analysis (association rules, bayesian networks, …)
h.. Models postprocessing/refinement (tuning weigths, pruning, ….)
i.. Scalability issues (fast evaluation, parallel approaches, …)
j.. Applications to real-world problems (text mining, web mining, industry, bioinformatics, …)

Instructions for authors:

Submitted papers should have around 20 pages, and they must follow the format guidelines specified in the Soft Computing Guide for Authors, available at:

http://www.springer.com/west/home/computer/artificial?SGWID=4-147-70-1120752-0
→ instruction for authors (menu)

Papers have to be submitted by sending a PDF file by e-mail to the three guest editors: mjjesus@ujaen.es, jgamez@dsi.uclm.es and jpuerta@dsi.uclm.es

Important Dates	
Tentative submission (title and abstract)	December 15, 2006
Paper submission	February 15, 2006
Notification of acceptance/rejection	April 15, 2007
Second revision (if needed)	May-June, 2007
Camera-ready manuscripts	July 15, 2007