Special Issue on Intelligent Web Interaction

Guest Editorial

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Various Web systems/services are currently providing a great deal of benefits for users, and Web interaction to design interaction between users and Web systems is becoming especially important both for research and business. Web interaction has been realized through related technologies including interactive data mining/information retrieval, intelligent systems, personalization, user interfaces and so on. However, each study and development has been done independently in different research fields, which might discourage us from studying Web interaction from unified view of human-system interaction and making Web interaction more intelligent by applying machine learning and soft computing.

We organized the 2011 International Workshop on Intelligent Web Interaction (IWI-2011) at Lyon to bring together a variety of researchers in diverse fields like Web systems, Artificial Intelligence, computational intelligence, human-computer interaction and user interfaces. The workshop was collocated with 2011 IEEE/WIC/ACM International Conference on Web Intelligence (WI-2011). The IWI workshop has been held from 2006 yearly, and has grown to be one of the largest workshops affiliated with the WI conference.

This special issue is consisting of six selected papers from IWI-2011. The purpose of this special issue is to present Intelligent Web Interaction as a new and promising research field. Presenters of the IWI-2011 were encouraged to submit papers to this special issue. All submitted papers are equivalently reviewed in terms of relevance, originality, significance and presentation based on standard review criteria of Journal of Emerging Technologies in Web Intelligence.

The first paper "Co-Authorship Networks Visualization System for Supporting Survey of Researchers' Future Activities" (Takeshi Kurosawa and Yasufumi Takama) describes a visualization system to support users to predict future research activities from current co-authorship networks. This is a quite challenging study because it is strongly concerned to prediction of future dynamic development of human-relational networks. Since collaboration of researchers is essential for researchers' activities, co-authorship network is suitable for predicting future activities. This paper focuses on the task of discriminating growing researchers from supervisors. The effectiveness of the proposed system is evaluated through the detailed analysis of two participants' analyzing process of InfoVis 2004 Contest dataset.

The second paper "Computational Approach to Prediction of Attitude Change Through eWOM Messages Involving Subjective Rank Expressions" (Kazunori Fujimoto) proposes a computational model to predict potency-magnitude relations of electric word-of-mouth messages involving subjective rank expressions. This paper defines three message classes, which are also studied in the areas of opinion mining and sentiment analysis, and investigates mathematically how the potency-magnitude relations change based on the values of the evaluation parameters.

The third paper "Balancing the Trade-Offs Between Diversity and Precision for Web Image Search Using Concept-Based Query Expansion" (Enamul Hoque, Orland Hoeber and Minglun Gong) experimentally investigates trade-off between the promotion of diversity and the precision of the most common sense in diversifying image search results. The image search is done by concept-based query expansion with Wikipedia. As a result of these experiments, an automatic method for tuning the diversification parameter is proposed based on the degree of ambiguity of the original query.

The fourth paper "Which is the best?: Re-ranking Answers Merged from Multiple Web Sources" (Hyo-Jung Oh, Pum-Mo Ryu and Hyunki Kim) proposes a novel method to determine the best answers collected from multiple Web sources. Local optimal answers are selected by several specialized sub-QAs in a distributed QA framework. In order to find global optimal answers, merged candidates are re-ranked by adjusting confidence weights based on the question analysis. The proposed system applies a SVM classification algorithm to adjust confidence weights calculated by own ranking methods in

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sub-QAs. The effects of the proposed re-ranking algorithm are evaluated through a series of experiments.

The fifth paper "Graph-cut based Constrained Clustering by Grouping Relational Labels" (Masayuki Okabe and Seiji Yamada) proposes a novel constrained clustering method based on a graph-cut by semi-definite programming. The proposed algorithm begins with a single cluster of a whole dataset and repeatedly divide the larger cluster into two sub-clusters. The division is done by swapping rows and columns of a matrix obtained from a graph-cut problem. Experimental results using datasets from the Open Directory Projects and WebKB corpus support their method is promising for interactive Web clustering.

The last paper "Careful Seeding Method based on Independent Components Analysis for k-means Clustering" (Takashi Onoda, Miho Sakai and Seiji Yamada) applies ICA (Independent Components Analysis) to effective initial seeding for K-means clustering. Although the k-means clustering is a widely used clustering technique for the Web because of its simplicity and efficiency, the clustering results significantly depend on the initial clustering centers. This paper provides a novel seeding method to determine effective clustering centers by selecting the nearest data to independent components obtained by ICA. They evaluate performance of the proposed method by comparing with other seeding methods using various benchmark datasets.

As mentioned at the beginning, Intelligent Web Interaction is a new and promising research field. We strongly hope this special issue will motivate many other researchers to join this growing research field.

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