
Preface

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Biographical notes: Toyohide Watanabe received his BS, ME and Dr. Eng from Kyoto University in 1972, 1974 and 1983, respectively. In 1987, he was an Associate Professor in Department of Information Engineering, Nagoya University and then was a Professor in 1994. After then, he moved as a Professor to Department of Systems and Social Informatics, Graduate School of Information Science, Nagoya University, in 2003. His research interests include knowledge of personal intelligent activity, computer supported collaborative learning, social environment simulations, spatio-temporal model and geographic information systems and so on. He is a member of the ACM, AAAI, AACE, KES International, the IEEE-CS, etc.

This special issue ‘Advanced Approach on Information Retrieval: Foundations and Applications’ is composed of seven papers, selected from KES/IIMSS2012, held in Gifu, Japan from 23–25 May 2012. IIMSS represents Intelligent Interaction Multi-media Systems and Services, and deals with systems which manage multi-media and services through multi-media under the key terms ‘intelligence’ and ‘interaction’, as the research domain.

Seven selected papers are mainly categorised into information search/retrieval mechanisms from interaction-oriented information management viewpoints and application-oriented services from algorithmic research viewpoints. The four papers are related to the first group of information search/retrieval interests.

The first paper ‘Approximate search algorithm for aggregate k-nearest neighbour queries on remote spatial databases’ written by Prof. H. Sato and Prof. R. Narita proposes RQP-M algorithm to make it efficient to search k-ANN query results. RQP-M algorithm refines query results, originally researched by RQP-S with subsequent k-NN queries. The second paper ‘A new spatio-temporal prediction approach based on aggregate queries’ authored by Prof. J. Feng, Mr. Z. Zhu, Dr. Y. Shi and Mr. L. Xu proposes Dynamic Sketch (DS) index by using a modified method of Adaptive Multi-dimensional Histogram (AMH*) in order to partition intelligently the static sketch and improve the approximate quality of aggregate queries in road networks. The third paper ‘Encoding network-constrained travel trajectories using routing algorithms’ written by Mr. P.M. Lerin, Prof. D. Yamamoto and Prof. N. Takahashi proposes a generic encoder for network-constrained travel trajectories and shows two encoders by combining the proposed generic encoder with two routing algorithms. The fourth paper ‘A preventing method for overlapping focuses in a Focus + Glue + Context Map’ written by Mr. H. Mizutani, Prof. D. Yamamoto and Prof. N. Takahashi describes two solutions for overlapping multiple focuses in the problem that the road network connections cannot be drawn. They overlap the Repulsion method and the Water Drop method.

The remaining three papers are related to the second group of application-oriented services. The fifth paper ‘Optimal study number of stochastic e-learning system’ authored by Prof. S. Nakamura, Prof. K. Nakayama and Prof. T. Nakagawa proposes a stochastic model by using access logging data of contents in e-Learning system: two stochastic problems for supporting the study are addressed, depending on whether a lecturer provided a suitable study support or not. The sixth paper ‘Multiple-choice cloze exercise generation through English grammar learning support’ written by Ms. A.S. Sunar, Dr. Y. Hayashi and Prof. T. Watanabe proposes a representation method of English grammar by part-of-speech tags and specific words as units and the semantic relationships between units. Moreover, the calculation method for estimating understanding degree of student and the learning strategy for generating the next exercises is proposed. Finally, the seventh paper ‘A method for generating presentation slides based on expression styles using document structure’ authored by Ms. Y. Wang and Prof. K. Sumiya proposes a generation method for presentation slides by composing skeletons for lecturer slides with expression styles of slides. And also they show skeletons in a presentation with the results of an evaluation of its effectiveness.

It is very pleasure for us to note that all papers are visionary and deserve appreciation by the scientific community. We wish to thank reviewers for their constructive feedbacks.