
Editorial

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Biographical notes: Toyohide Watanabe received the BS, ME and PhD from Kyoto University in 1972, 1974 and 1983, respectively. In 1987, he was an Associate Professor in the 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 management of personal intelligent activity, computer-supported collaborative learning, social environment simulation, spatio-temporal model and geographic information systems and so on. He is a member of the ACM, AAI, AACE, KES International and the IEEE-CS.

Lakhmi C. Jain is a Director/Founder of the Knowledge-based Intelligent Engineering Systems Centre, located in the University of South Australia. He is a fellow of Engineers Australia. His interests focus on the artificial intelligence paradigms and their applications in complex systems, art-science fusion, e-education, e-healthcare, unmanned air vehicles and intelligent agents.

Currently, most of our activities are dependent on the functionality of environments, which are provided successively with intelligent information systems and knowledge support systems, and are increasingly cooperated, with behaviours of others. Our environment is a necessary and important partner with a view to designing an intelligent-oriented society. This special issue is planned to address the fundamental research view, which should be infrastructures or most basic functions to develop and manage such society. This volume includes nine research papers on the state-of-the-art in the theory and applications of supporting knowledge environment. These nine papers can be divided into three groups: fundamental technologies for constructing knowledge

infrastructure in the first three papers; basic managing tools/means for knowledge resources in two papers followed by three previous papers; applications for knowledge environment in the remaining four papers.

The first paper by Asakura et al. is on developing a communication method to collect effectively information about sufferers in disaster situations. The authors propose an ad-hoc unicursal protocol so that terminals possessed with sufferers can be connected to each other in linear form since the longevity of networks is one of the most important aspects for such situations. Also, they introduce virtual terminals in which two neighbouring terminals activate alternatively so as to decrease the frequency of packet sending. Preliminary evaluation results are presented.

The second paper by Rubens et al. is on proposing a group formation method for collaboration. The main topic is to form the group with special experts with respect to organising computer-supported collaborative learning. They propose a method called Collaboration Aimed at Finding Experts (CAFÉ), based on the data-driven approach. CAFÉ makes easy and dynamic construction processes possible.

The third paper by Hayashi et al. is on modelling better understanding process of learning/instructional theories. They address the conceptualisation of knowledge theories for structuring learning/instructional theories, and propose a mechanism to organise the perspective for understanding and utilising the theories. The basic viewpoint for theory conceptualisation is ontology, and the strategy-centred modelling is discussed with respect to this ontology basis.

The fourth paper by Sugiki and Matsubara is on proposing a new method for retrieving product information, using product reviews. The method is first to compute the similarity between a user's request, extracted from a natural language query, and consumers' opinions, extracted from reviews of the product, and then to assign the score, based on the similarity, to the corresponding product. This scoring mechanism makes the product retrieval with the variety and subjectivity queries successful. Additionally, the thesaurus is used to manipulate semantic similarities between opinion expressions.

The fifth paper by Murata et al. is on supporting real-time understanding of monologue speech such as lectures and commentaries. Concerning this objective, the linefeed insertion method is proposed. The linefeed insertion is implemented by rule-based technique, focused mainly on the morphemes, dependencies and clause boundaries. The experimental results are reported.

The sixth paper by Iribe et al. is on developing a web-based lecture support system. This system encourages the communication among students or between teacher and student through slides as usual media, but neither text chats nor bulletin boards. As a result, enhanced understanding is achieved through classroom questions and answers.

The seventh paper by Tateiwa et al. is on developing a system *LiNeS* to facilitate exercises with virtual machines in the existing computer laboratories of universities. This system supports a method for constructing a virtual network of heterogeneous virtual machines and another method for applying our overlay structure to the virtual networks in each PC. The evaluation result is summarised by comparing *LiNeS* with the actual network.

The eighth paper by Noguchi et al. is on developing an educational system on algorithm or programming, which makes the understanding degrees of learners externalise so as to be able to operate their composite objects in a domain scope. By using this system, learners can visualise the programme behaviours as an algorithm,

and also confirm their understanding contents for the algorithm. In comparison with another similar system, the evaluation results are reported.

The final paper by Gotoda et al. is on developing a training-support system for joggers with mobile sensors. The system constructed on sensor network aims at manipulating awareness information and feeding back this information to joggers, using kinetic feature and communication situation at real time.

It is very pleasing 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.