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Proceedings

The fifth International Symposium on Knowledge and Systems Sciences

November 10-12, 2004

International Society for Knowledge and Systems Sciences

Japan Advanced Institute of Science and Technology

Proceedings of the fifth
International Symposium on
Knowledge and Systems Sciences (KSS2004)

November 10-12, 2004, Ishikawa, Japan

Edited by:

Yoshiteru Nakamori, Zhongtuo Wang, Jifa Gu and Tieju Ma (eds.)

Organized by:

International Society for Knowledge and Systems Sciences (ISKSS)

Co-sponsors:

Japan Advanced Institute of Science and Technology (JAIST), Japan

Dalian University of Technology (DUT), China

Institute of Systems Science, Chinese Academy of Sciences (CAS), China

Tsinghua University, China

University of Hull, United Kingdom

Institute of Intelligent Information and Communications Technology, Konan University, Japan

Message from the Co-Chairs

The significant feature of development of knowledge science is the interdisciplinary program on an international scale. We need to promote the exchange and interaction of knowledge across disciplines and borders to explore the new territories and new frontiers. In the present stage, attempts to strictly define the knowledge science may be too ambitious, but a very tolerant, broad-based and open-minded approach to the discipline can be taken.

Knowledge science and systems science can be used for one another as methodology and tool and benefit each other. Around these disciplines, the first International Symposium on Knowledge and Systems Sciences, initiated and organized by Japan Advanced Institute of Science and Technology (JAIST), was held in September 2000 (KSS2000), then KSS2001 in Dalian University of Technology (Dalian, China), KSS2002 in University of Shanghai for Science and Technology (Shanghai, China), and KSS2003 in South China University of Technology (Guangzhou, China).

This year, the fifth symposium, KSS2004 will be held in JAIST with the support of the 21st century COE (center of excellence) program in JAIST. The COE program is a vehicle to integrate theory and practice, to combine knowledge in social science and knowledge in natural science, to produce new theories, and finally to create a new research field called the study of scientific knowledge creation.

The International Society for Knowledge and Systems Sciences was formally established in the year of 2003 at the International Symposium on Knowledge and Systems Science (KSS2003, November 29-30, 2003, Guangzhou, China). Now, our members spread over ten countries and areas. The overall purpose of the society is to promote development of knowledge science and systems science, as well as collaboration between both of two sciences. It further seeks to encourage research and facilitate communication between and among scientists and professionals from various disciplines and professions at local, regional, national, and international levels.

Co-chairs of the International Program Committee:

Nakamori, Yoshiteru (Japan Advanced Institute of Science and Technology, Japan)
Wang, Zhongtuo (Dalian University of Technology, China)
Gu, Jifa (Institute of Systems Science, Chinese Academy of Sciences, China)

November, 2004

Organization of Symposium

International Program Committee:

Co-Chairs:

Yoshiteru Nakamori (Japan Advanced Institute of Science and Technology, Japan)
Zhongtuo Wang (Dalian University of Technology, China)
Jifa Gu (Chinese Academic of Sciences, China)

Members:

Jian Chen (Tsinghua University, China)
Yanzhong Dang (Dalian University of Technology, China)
Michael Jackson (University of Hull, United Kingdom)
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K.K. Lai (City University of Hong Kong, Hong Kong, China)
Gerald Midgley (Christchurch Science Centre, New Zealand)
Marek Makowski (International Institute for Applied Systems Analysis, Austria)
Takao Terano (University of Tsukuba, Japan)
Shouyang Wang (Chinese Academic of Sciences, China)
Andrzej P. Wierzbicki (National Institute of Telecommunications, Poland)
Taketoshi Yoshida (Japan Advanced Institute of Science and Technology, Japan)
Wuyi Yue (Konan University, Japan)
Chunjun Zhao (Tsinghua University, China)
Zhichang Zhu (University of Hull, United Kingdom)

Local Organization Committee:

Chairman:

Yoshida, Taketoshi (Japan Advanced Institute of Science and Technology, Japan)

Members:

Tu Bao Ho
Van Nam Huynh
Saori Kawasaki
Tieju Ma
Yuji Shinoda
Tomoko Kikuchi
Hongtao Ren
Akiko Kawabata

PROGRAM (Tentative)

Location: Ishikawa High-Tech Center

November 10:

09:00-10:00 Registration
10:00-10:20 Opening Address (Hall)
10:20-10:50 Plenary Talks in JAIST Forum (Hall)
10:50-11:00 Coffee Break
11:00-12:00 Plenary Talks in JAIST Forum (Hall)
12:00-13:30 Lunch
13:30-17:00 Parallel Sessions
- 13:30-15:00 Room A – Knowledge Engineering
- 13:30-15:00 Room B – Knowledge Management (I)
- 13:30-15:00 Room C – Knowledge Creation
- 15:00-15:30 Coffee Break
- 15:30-17:00 Room B – Knowledge Management (II)
- 15:30-17:00 Room C – Management of Technology (MOT)

18:00-19:30 Reception in High-Tech Exchange Center

November 11:

09:00-12:10 Parallel Session
- 09:00-10:30 Room A – Data Mining (I)
- 09:00-10:30 Room B – Agent (I)
- 09:00-10:30 Room C – Information System
- 10:30-10:40 Coffee Break
- 10:40-12:10 Room A – Data Mining (II)
- 10:40-12:10 Room B – Agent (II)
- 10:40-12:10 Room C – Agent and Behavioral Science

12:10-13:30 Lunch
13:30-17:30 Parallel Sessions
- 13:30-15:00 Room A – Data Mining (III)
- 13:30-15:00 Room B – Agent (III)
- 13:30-15:00 Room C – Decision Making (I)
- 15:00-15:30 Coffee Break
- 15:30-17:00 Room A – Data Mining (IV)
- 15:30-17:30 Room B – Applied Systems Analysis
- 15:30-17:00 Room C – Decision Making (II)

November 12: (Hall)

09:00-11:00 Plenary Talks
10:30-11:00 Coffee Breaks
11:00-12:30 Plenary Talks
12:30-13:30 Lunch
13:30-15:30 Plenary Talks
15:00-15:30 Coffee Break
15:30-17:00 Plenary Talks
17:00-17:30 Closing Address

09:00-10:00 Registration (Lobby)

10:00-12:00 Opening Address & Plenary Talks (Hall)

10:00-10:20 Opening Address
Sukekatsu Ushioda (President, JAIST)
10:20-10:50 *Introduction to a COE Program in JAIST*
Yoshiteru Nakamori (Program Leader, JAIST)
10:50-11:00 Coffee Break
11:00-11:30 *Technology Creation Based on Knowledge Science*
Masahiro Takagi (Materials Science, JAIST)
11:30-12:00 *Knowledge Management for Scientific Research Lab. in University*
Quamrul Hasan (Strategic Center, JAIST)

12:00-13:30 Lunch

13:30-15:00 Parallel Sessions

Knowledge Engineering Room A Chair: Lili Rong
Xiangpei Hu, *A Knowledge-Based Processing Principle of Supplier Location in E-Commerce Order Real-time Processing*
Lili Rong, *A Method of Building the Knowledge Map for the Public Health Emergency Control*
Kuanjiu Zhou, *Intelligent Telephony Call Center*

Knowledge Management (I) Room B Chair: Hisataka Noguchi
Weisen Guo, *Science and Technology Projects Management Based on Knowledge Management*
Xiaolin Jiang, *Research on Knowledge Management in Managing Science & Technology Projects*
Masao Usuki, *Experimental Results in Face to Face Informal Communication -- using the Cyber IRORI Prototype*

Knowledge Creation Room C Chair: Yukari Nagai
Hisao Hamazaki, *The Career Design -- Individual and Organization*
Takashi Yoshinaga, *Process of Knowledge Reconstruction after Experiencing Failure -- A Case Study on R&D Projects at a Corporate Laboratory*
Takamitsu Tanaka, *Possibility of the Denial Expression Method in Creative Design Process*

15:00-15:30 Coffee Break

15:30-17:00 Parallel Sessions

Knowledge Management (II) Room B Chair: Xijin Tang
Jing Tian, *Developing Knowledge Management System in Academic Laboratories*
Norio Ishii, *A Learning Environment Supporting Learners' Reflective Practice*
Andre Saito, *Knowledge Management Education -- A Framework towards the Development of a Comprehensive Degree Program*

MOT Room C Chair: Meng Li

Tieju Ma, *Roadmapping and i-Systems for Supporting Scientific Research*
Li Luo, *Supply Chain Strategy Analysis -- A Systems Perspective*
Jie Yan, *Study on Roadmapping Methods for Supporting Scientific Research*

09:30-10:30 Parallel Sessions

Data Mining (I) Room A Chair: Saori Kawasaki

Canh Hao Nguyen, *Crystal Structure Determination using Data Mining Methods*
Le Anh Cuong, *Improving Word Sense Disambiguation Accuracy using Naive Bayesian Classifier with Rich Features*
Duc Dung Nguyen, *Efficient Model Selection for Support Vector Machines*

Agent (I) Room B Chair: Jian Chen

Mina Ryoke, *Agent-Based Approach to Complex Systems Modeling*
Yuji Shinoda, *Studies on Tactics Searching in a Multi-Agent System*
Masato Kobayashi, *Analyzing Tow-Away Policy in a Local Community*

Information Systems Room C Chair: Jiangning Wu

Jiangning Wu, *An Overview of the Ontology Used for Information Retrieval*
Donghua Pan, *Hierarchical Peer-to-Peer Search in Distributed Networks Based on JXTA Protocol*
Haoxiang Xia, *A Framework and Prototype System for Using Web Services to Support Distribution Logistics*

10:30-10:40 Coffee Break

10:40-12:10 Parallel Sessions

Data Mining (II) Room A Chair: Dam Hieu Chi

Minh Le Nguyen, *A Cross-Language Text Summarization using Statistical Machine Learning*
Kentaro Nagai, *Rule Mining in Textual Data Using Passages*
Si Quang Le, *A Novel Graph-Based Similarity Measure for 2D Chemical Structures*

Agent (II) Room B Chair: Haoxiang Xia

Daiping Hu, *Study on the Movements of Agents in Multi-Agent Based Model Systems*
Daiping Hu, *The Methods of Model Integration Using Agents*
Peng Zhang, *An Activity Systems Theory Approach to Agent Technology*

Agent & Behavioral Science Room C Chair: Shouyang Wang

Yuji Shinoda, *Strategy Searching for Business Gaming -- Software Agents Work for a Game Designer*
Tomoko Kikuchi, *Interaction Rules on Human Performance Changes*
Nguyen Thu Hang, *Intelligent Agents in Computer Games Using Bayesian Networks*

12:00-13:30 Lunch

13:30-15:00 Parallel Sessions

Data Mining (III) Room A Chair: Van Nam Huynh
Tho Hoan Pham, *Computational discovery of yeast transcriptional regulatory modules from DNA sequences and gene expression data*
Xuan Hieu Phan, *An Unsupervised Approach to Coreference Resolution*
Tuan Nam Tran, *Predicting Protein-Protein Interactions for the Budding Yeast using Inductive Logic Programming and Multiple Sources*

Agent (III) Room B Chair: Tomofumi Sumita
Tomofumi Sumita, *Breeding Knowledge-Value by Communication among Multi-Agents*
Masahito Shimazaki, *Focusing and Sharing a Problem by Communication among Multi-Agents*
Shun-ichi Kigawa, *Group Decision-Making by The Electronic Meeting System (EMS)*

Decision Making (I) Room C Chair: Kyoichi Kijima
Toshiyuki Toyota, *Two-Level Hierarchical Hypergame Model and its Applications*
Shigemasa Suganuma, *Fuzzy Landscape Theory and Its Application --A Summary*
Naoki Konno, *A Dynamic Model of Decision Making with Rough Reasoning and its Application*

15:00-15:30 Coffee Break

15:30-17:00 Parallel Sessions

Data Mining (IV) Room A Chair: Tuan Nam Tran
Hui Zhang, *A Hybrid Genetic K-means Algorithm for Clustering High Dimensional Data*
Wei Huang, *A Framework of Hypotheses Generation from Scientific Literatures*
Minh-Hoang Le, *Detecting Emerging Trends from Scientific Corpora*

Applied Systems Analysis Room B (15:30-17:30) Chair: Tieju Ma
Weiguo Xu, *Chemical Kinetic Systems Derived from Chaotic Arms Races Model*
Wita Purwasih, *Supporting Decision Makers with Integrated Modeling Framework: Its Application in Environmental Assessment*
Mitsumi Miyashita, *Applicability of Satellite-Derived Data to Oil Spill Assessment*
Kenji Takano, *Analysis of Spoken Dialogues Based on Local Discourse Structures*

Decision Making (II) Room C Chair: Huanchen Wang
Huizhang Shen, *Reaching Consensus in Allocating the Decision-makers' Weight in Group Decision-making Problems*
Van Nam Huynh, *Weighted Aggregation of Assessments in Multiple Attribute Decision Making under Uncertainty*
Huizhang Shen, *Approaching Consensus Algorithm of Group Decision Based on Clustering Analysis*

09:00-10:30 Plenary Talks Hall Chair: Zhongtuo Wang

09:00-09:30 *How to Synthesize Experts Opinions-building Consensus from Different Perspectives*
Jifa Gu (Chinese Academy of Sciences, China)
09:30-10:00 *Exploring Computerized Support for Group Argumentation for Idea Generation*
Xijin Tang (Chinese Academy of Sciences, China)
10:00-10:30 *Contingent Framework for Supporting Participatory Decision-making*
Kyoichi Kijima (Tokyo Institute of Technology, Japan)

10:30-11:00 Coffee Break

11:00-12:30 Plenary Talks Hall Chair: Tu Bao Ho

11:00-11:30 *Crude Oil Price Forecasting with TEI@I Methodology*
Shouyang Wang (Chinese Academy of Sciences, China)
11:30-12:00 *Modeling Web for Knowledge Integration and Creation*
Marek Makowski (IIASA, Austria)
12:00-12:30 An Approach to Performance Analysis and Optimization of Communication Networks
Wuyi Yue (Konan University, Japan)

12:30-13:30 Lunch

13:30-15:00 Plenary Talks Hall Chair: Jifa Gu

13:30-14:00 *Knowledge Management in China's Enterprises*
Yuanzhang Liu (Chinese Academy of Sciences, China)
14:00-14:30 *Knowledge Transfer in Supply Chain -- Hold Suppliers' Complementary Knowledge*
Jian Chen (Tsinghua University, China)
14:30-15:00 *Discussions on the Distance of Information-state Transition*
Huanchen Wang (Shanghai Jiaotong University, China)

15:00-15:30 Coffee Break

15:30-16:30 Plenary Talk Hall Chair: Taketoshi Yoshida

15:30-16:00 *Mining Scientific Data*
Tu Bao Ho (Knowledge Science, JAIST)
16:00-16:30 Solving the *Mystery of Rough Sets --Links between Topologies and Rough Sets*
Milan Vlach (Hosei University, Japan) (Charles University, Czech Republic)
16:30-17:00 *Flow Graphs - a New Paradigm for Data Mining and Knowledge Discovery*
Zdzislaw Pawlack (Polish Academy of Sciences, Poland)

17:00-17:30 Closing Address (Information on KSS and IFSR)
Taketoshi Yoshida (Secretary General to KSS, JAIST)

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