

The 6th International conference on  
Knowledge, Information and Creativity Support  
Systems

“Creative Economy and Creativity Support”

Beijing, China

October 22-24, 2011

Program and Abstracts

**Organized by**

Academy of Mathematics and System Sciences, Chinese Academy of Sciences

## Welcome to KICSS'2011

Creativity enters into every aspect of life virtually. Every one of us is creative, to a degree. Facing the ever-changing and full-of-conflicts world, creative thinking, innovative ideas and implementation are barely needed. Supporting creativity is very natural and becoming one of most challenging areas. Research on creativity support systems and its relevant fields is emerging. It is a multidisciplinary field where advances and innovations rely on the combined efforts of a wide range of scientific, technological and management disciplines along with systems practice. The conference on knowledge, information and creativity support systems (KICSS) aims to facilitate technology and knowledge exchange between international researchers/scholars in the field of knowledge science, information technologies, systems science and creativity support systems.

To be held in Beijing, a vigorous big city with an unparalleled wealth of discovery from long history and modern development, KICSS2011 is the 6th event in the series of KICSS, which started in Ayutthaya (2006) and successfully was held in Nomi (2007), Hanoi (2008), Seoul (2009) and Chiang Mai (2010). The theme of 2011 KICSS event is Creative Economy and Creativity Support. A broad range of research topics in the fields of knowledge engineering and science, information technology, creativity support systems and complex system modeling is covered.

The pre-conference proceedings collect 22 full-length papers from more than 30 submissions from 7 countries, including Czech Republic, Germany, Japan, Poland, Saudi Arabia, Thailand and China. Each paper was assigned for peer-review to 2 to 5 program committee members or domain experts from 9 countries, including Australia, France, Ireland, Japan, New Zealand, Thailand, UK, USA and China. The acceptance of paper was then based on at least 2 review results acquired within a limited period of time. KICSS is a ba not only to exhibit the latest research work on effective concepts, methodologies, and advanced knowledge intensive tools to tackle with a variety of complex problems in this colorful while conflicted world, but to connect people across disciplines as well.

A workshop on Mind and Service Innovation will be convened one-day before KICSS'2011 main conference. This workshop provides more introductory knowledge to creativity and innovation, creative techniques and their practice to service under the context of Japan. The workshop is also dedicated to the KICSS 2011 theme - Creative Economy and Creativity Support.

We are grateful to people who are interested and would like to share their research results, who helped to review those submissions at a very short period of time with precious comments, and who provided help in proceedings edition and publication.

Finally, we owe the success to financial support from Institute of Systems Science, Chinese Academy of Sciences, and Academy of Mathematics and System Sciences, CAS.

Susumu Kunifuji, Xijin Tang, Thanaruk Theeramunkong

*October, 2011*

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## **CONFERENCE INFORMATION**

### **Organized by**

Academy of Mathematics and Systems Science, Chinese Academy of Sciences

### **Co-organized by**

Japan Advanced Institute of Science and Technology

Sirindhorn International Institute of Technology, Thammasat University

Institute of Systems Science, AMSS, CAS

Japan Creativity Society

Systems Engineering Society of China

### **Hosted by**

Institute of Systems Science, Academy of Mathematics and System Sciences,  
Chinese Academy of Sciences, China

### **Web site**

<http://meta-synthesis.iss.ac.cn/kicss2011/>

### **On-Line Conferencing Ba (在线会场)**

<http://meta-synthesis.iss.ac.cn/kicss2011/olcb>

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## International Program Committee

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## **PRESENTATION GUIDELINES FOR PRESENTERS**

1. All presenters are required to register onsite at the Conference to receive your own conference package and name card.
2. There are projection equipments and computers at the presentation rooms. Please report to your session chair and copy your presentation file to the computer at the beginning of your session. This will save time for changing over. If you use your own Apple laptop, please bring converter.
3. Unless you have been informed otherwise, 20 minutes has been allowed per presentation, 8 minutes for Q&A and 2 minutes for changeover in parallel sessions.
4. Wireless access to Internet is available during the sessions at the Conference Hall and meeting room at AMSS Siyuan Building.
5. Welcome your comment via the KICSS 2011 on-line conferencing ba (accessible from KICSS2011 Web site).



## PROGRAM OVERVIEW (Venue: AMSS Siyuan Building)

<b>October 21, 2011 (Friday), AMSS Conference Hall</b>	
8:20-9:00	<b>Workshop Registration</b>
8:50-12:40	<b>Workshop on Mind and Service Innovation</b>
15:00-18:30	<b>KICSS Registration</b>
18:30-20:00	<b>Reception (Wuke Restaurant)</b>
<b>October 22, 2011 (Saturday)</b>	
Morning	<b>AMSS Conference Hall</b>
9:00-9:10	<b>Opening</b>
9:10-10:10	<b>Innovation Lecture: Susumu Kunifuji (Japan)</b> An Introduction to Process and Mind Innovation by The KJ Method
10:10-10:40	<b>Photographing &amp; Tea Break</b>
10:40-11:40	<b>Invited Plenary Talk: Yanchun Zhang (Australia)</b> An e-Health Service Framework for Data Integration, Data Mining, and Knowledge Management in Health Informatics
11:40-12:40	<b>Invited Plenary Talk: Kazushi Nishimoto (Japan)</b> Designing Life Worth Living: Knowledge Creation Media Will Bring Innovative Lifestyle
12:40-13:30	<b>Lunch ( AMSS Dining Hall)</b>
13:30-15:00	<b>Session I (Rm712)</b> Paper No.(0044,0047,0065)
	<b>Session II(Rm703)</b> Paper No.(0036,0043,0071)
15:00-15:30	<b>Tea Break</b>
15:30-17:30	<b>Session III (Rm712)</b> Paper No.(0033,0048,0051,0061)
	<b>Session IV (Rm703)</b> Paper No.(0002,0050,0052,0054)
18:00-19:00	<b>Dinner ( Wuke Restaurant)</b>
<b>October 23, 2011 (Sunday)</b>	
Morning	<b>AMSS Conference Hall</b>
9:00-10:00	<b>Plenary Talk: Jifa Gu (China)</b> On Phronesis and Master-Disciple Education Method in TCM
10:00-11:00	<b>Invited Plenary Talk: Ning Zhong (Japan)</b> Wisdom Web of Things (W2T): Fundamental Issues, Challenges and Potential Applications
11:00-11:20	<b>Tea Break</b>
11:20-11:55	<b>Keynote Speech: Vilas Wuwongse (Thailand) A Linked Data Model for Semantic E-books</b>
11:55-12:30	<b>Keynote Speech: Thanaruk Theeramunkong (Thailand)</b> Information Extraction and Text Summarization in Thai Language
12:30-13:30	<b>Lunch (AMSS Dining Hall)</b>
13:30-15:30	<b>Session V (Rm712)</b> Paper No.(0037,0053,0066,0068)
	<b>Session VI (Rm703)</b> Paper No.(0025,0046,0067)
15:30-16:00	<b>Tea Break</b>
16:00-17:00	<b>Closing (Rm712)</b>
17:30-19:30	<b>Banquet (Wuke Restaurant)</b>
<b>October 24, 2011 (Monday)</b>	
7:00-13:00	<b>Trip to the Great Wall</b>

## GENERAL PROGRAM

### October 21 (Friday)

Conference Hall, AMSS Siyuan Building

<b>Morning</b>	<b>Workshop on Service and Mind Innovation</b>	
8:20-9:00	Workshop Registration	
8:50-9:00	Opening Speech	Welcome speech by Professor Jifa Gu(AMSS,CAS)
9:00-10:00	Takashi Asano 浅野隆 (Japan Management Association)	Theory and Cases of BA-Management: How Mind Innovation by BA-Management can change a company
10:00-10:50	Takeo Higuchi 樋口健夫 (Idea Marathon, Japan)	Action Proposal of Idea-Marathon for Mind Innovation, and Future
10:50-11:00	Tea Break	
11:00-11:50	Youji Kohda 神田陽治 (JAIST, Japan)	Service Innovation: a principle and practical cases
11:50-12:40	Toshihiko Yamakami 山上俊彦, (Senior Specialist, ACCESS)	Emerging New Perspectives in Modern Innovation Engineering
12:40-13:30	Lunch (AMSS Dining Hall)	
<b>15:00-18:30</b>	<b>KICSS Registration</b>	
<b>18:30-20:00</b>	<b>Reception (Wuke Restaurant, 4th Floor)</b>	

## October 22 (Saturday Morning)

Conference Hall, AMSS Siyuan Building

### Opening & Innovation Lecture (Chair: Jifa Gu)

9:00-9:10	Opening Speech	Welcome speech by Professor Xiaoshan GAO, Head of Institute of Systems Science, CAS
9:10-10:10	Susumu Kunifuji (JAIST, Japan)	<b>Innovation Lecture:</b> An Introduction to Process and Mind Innovation by The KJ Method

10:10-10:40 Photographing & Tea Break

### Invited Plenary Talks (Chair: Susumu Kunifuji)

10:40-11:40	Yanchun Zhang (Victoria University, Australia )	An e-Health Service Framework for Data Inte- gration, Data Mining, and Knowledge Man- agement in Health Informatics
11:40-12:40	Kazushi Nishimoto (JAIST, Japan)	Designing Life Worth Living: Knowledge Crea- tion Media Will Bring Innovative Lifestyle

**12:40-13:30** Lunch ( AMSS Dining Hall)

## October 22 (Saturday afternoon)

Meeting rooms at 7th floor, AMSS Siyuan Building

### 13:30-15:00 Parallel Sessions

#### Session I (Chair: Youji Kohda) **Rm712**

- |              |   |
|--------------|---|
| Wulanqiqige  | Development and Evaluation of Creativity Test for Chemistry Education in a Secondary School Level             |
| Takeo Higchi | Study of Creative Thinking and Writing by Idea-Marathon System With Proposal of Virtual Oblivion Memory Store |
| Hao Wang     | iChance: Towards New-Generation Collaborative Creativity Support System for Advanced Market Innovation        |

#### Session II (Chair: Andrzej M.J. Skulimowski) **Rm703**

- |              |   |
|--------------|---|
| Zhigang Cao  | Rebels Lead to the Doctrine of the Mean: Opinion Dynamic in a Heterogeneous DeGroot Model |
| Zhenpeng Li  | Polarization and non-positive social influence: A Hopfield Model of Emergent Structure    |
| Xiaowei Zhao | Cooperation with Tolerance Based on Long-term Return in Multi-Agent System                |

### 15:00-15:30 Tea Break

### 15:30-17:30 Parallel Sessions

#### Session III (Chair: Kazushi Nishimoto) **Rm712**

- |                     |   |
|---------------------|---|
| Masanori Okada      | Educational environments that incentivize experience  |
| S. Aungkaseraneekul | Automated Thai-Language Essay Scoring with Unsupervised Learning Algorithm                          |
| P. Ballungpattama   | A Consonant-only Thai Input Method  |
| Tessai Hayama       | Information Provision Modules to Support Creation of Slides with Easily Understandable Presentation |

#### Session IV (Chair: Thanaruk Theeramunkong) **Rm703**

- |               |   |
|---------------|---|
| Taizo Miyachi | Development and Evaluation of Creativity Test for Chemistry Education in a Secondary School Level |
|---------------|---|

Kitti Koonsanit	Performance Comparison of Urban Areas Segmentation on Hyperspectral Imagery Using Clustering Algorithms
Eakasit Pacharawongsakda	Algorithm of acquisition of Pulse Wave Characteristics Improving Classifier Chains for Multi-label Classification using Dual Space Reduction
Nongnuch Ketui	Analysis of Thai Elementary Discourse Units and Their Detection

**18:00-19:00**

Dinner (Wuke Restaurant, 4th Floor)

## October 23 (Sunday Morning)

Conference Hall, AMSS Siyuan Building

### Plenary Talks (Chair: Yanchun Zhang)

- |             |   |   |
|-------------|---|---|
| 9:00-10:00  | Jifa Gu<br>(AMSS-CAS, China)                                      | On Phronesis and Master-Disciple Education Method in TCM                              |
| 10:00-11:00 | Ning Zhong<br>(Invited) (Maebashi Institute of Technology, Japan) | Wisdom Web of Things (W2T): Fundamental Issues, Challenges and Potential Applications |

**11:00-11:30** Tea Break

### Keynote Speeches (Chair: Ning Zhong)

- |             |  |  |
|-------------|--|--|
| 11:20-11:55 | Vilas Wuwongse<br>(AIT, Thailand)                          | A Linked Data Model for Semantic E-books                       |
| 11:55-12:30 | Thanaruk Theeramunkong<br>(Thammasat University, Thailand) | Information Extraction and Text Summarization in Thai Language |

**12:30-13:30** Lunch ( AMSS Dining Hall)

## October 23 (Sunday Afternoon)

Meeting rooms at 7th floor, AMSS Siyuan Building

### 13:30-15:30 Parallel Sessions

#### Session V (Chair: Taizo Miyachi)

**Rm712**

Md. Shiful Islam	Towards Building an E-learning and Knowledge Management Adoption Model
Cui Liang	A Model of Collaborative Learning for Improving the Quality of Medical Services
Tanatorn Tanantong	Towards ECG Monitoring Through Body Sensor Networks Using an Arrhythmia Indicator Ontology
Haoxiang Xia	A Conceptual Analysis of Interpersonal Knowledge Communication

#### Session VI (Chair: Xijin Tang)

**Rm703**

Andrzej M.J. Skulimowski	Fusion of Expert Information on Future Technological Trends and Scenarios
Zhigang Cao	Innovation Governs Everything Eventually: An Extension of the DeGroot Model
Rong Zhang	Research on Knowledge Transfer Mode in BA networks

### 15:30-16:00

### Tea Break

### 16:00-17:00

### Closing (Chair: Thanaruk Theeramunkong, Rm712)

16:00-16:50	Cheng Siong Lee (Monash University, Australia)	Collaborative Multi-Sensor Network & KICSS2012 Host Speech
16:50-17:00	Xijin Tang (AMSS-CAS, China)	KICSS2011 Closing Speech

### 17:30-19:30

### Banquet (Wuke Restaurant)

## **PRE-CONFERENCE**

### **Workshop on Service and Mind Innovation**

(Conference Hall, AMSS Siyuan Building)

1. Takashi Asano  
*Theory and Cases of BA-Management: How Mind Innovation by BA-Management can change a company*
2. Takeo Higuchi  
*Action Proposal of Idea-Marathon for Mind Innovation, and Future*
3. Youji Kohda  
*Service Innovation: a principle and practical cases*
4. Toshihiko Yamakami  
*Emerging New Perspectives in Modern Innovation Engineering*



## KICSS 2011 PLENARY TALKS & KEYNOTE SPEECHES

1. Susumu Kunifuji

(School of Knowledge Science, JAIST)

*Innovation Lecture: An Introduction to Process and Mind Innovation by The KJ Method*

2. Yanchun Zhang

(Center for Applied Informatics, Victoria University)

*An e-Health Service Framework for Data Integration, Data Mining, and Knowledge Management in Health Informatics*

3. Kazushi Nishimoto

(Research Center for Innovative Lifestyle Design, JAIST)

*Designing Life Worth Living: Knowledge Creation Media Will Bring Innovative Lifestyle*

4. Jifa Gu

(Academy of Mathematics and Systems Science, CAS)

*On Phronesis and Master-Disciple Education Method in TCM*

5. Ning Zhong

(Maebashi Institute of Technology, Japan and International WIC Institute, BJUT)

*Wisdom Web of Things (W2T): Fundamental Issues, Challenges and Potential Applications*

6. Vilas Wuwongse

(Asian Institute of Technology, Thailand)

*A Linked Data Model for Semantic E-books*

7. Thanaruk Theeramunkong

(SIIT, Thammasat University, Thailand)

*Information Extraction and Text Summarization in Thai Language*

**1. Innovation Lecture: An Introduction to Process and Mind Innovation by  
The KJ Method**

**Susumu Kunifuji**

*School of Knowledge Science, JAIST*

*Email: kuni@jaist.ac.jp*

## 2. An e-Health Service Framework for Data Integration, Data Mining, and Knowledge Management in Health Informatics

**Yanchun Zhang**

*Center for Applied Informatics, Victoria University*

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### **Abstract:**

With advances in radio-frequency identification (RFID) technology, sensor networks, database systems and networking technologies, a huge volume of health data is now electronically accessible via the Web, even from remote corners of the world. The health industry is deluged by data – there are 5.7 million hospital admissions, 210 million doctor’s visits, and hundreds of millions of medicines dispensed in Australia annually– which is both an opportunity and a challenge. And health care and medical service is becoming more data-intensive and evidence-based since electronic health records are used to track individuals' and communities' health information (particularly on changes). Medical professionals' time has become the most precious resource. We must find ways to effectively integrate and process health data, to automatically classify, summarise, discover and characterise relevant trends and to automatically flag anomalies. These substantially motivate and advance the emergence and the progress of data-centric health data and knowledge management research and practice, for example, Health Informatics.

In this talk, we will introduce an e-health service framework for Data Integration, Data Mining, and Knowledge Management in Health Informatics, and several case studies and research projects to address the challenges encountered in health service. The overall aim of this research is to develop a smarter, collaborative and adaptive health information service approach based on whole-of-life health service, pervasive data processing and data mining technology to promote e-health care. It will increase the speed, rigor and adaptability of decisions made by patients and medical professionals by focusing on services that will improve the identification and quality, integration and accessibility, relevance and interpretability of medical data.

### 3. Designing Life Worth Living: Knowledge Creation Media Will Bring Innovative Lifestyle

**Kazushi Nishimoto**

*Research Center for Innovative Lifestyle Design, JAIST*

*E-mail: knishi@jaist.ac.jp*

#### **Abstract:**

The great east Japan earthquake that occurred on March 11, 2011 drastically changed our mind. Many people (including myself) began redefining “what happiness is” and came to think we have to change our lifestyle. After the quake, in particular, the term “lifestyle” is generally considered a way of living ecologically to achieve sustainability. Needless to say, this is indispensable viewpoint. However, I believe that we will immediately lose purpose of life if we focus only on a survival aspect of sustainability. This is because human being is “thinking reed.” Human being is not only a living matter but also an intellectual matter. Therefore, to achieve real sustainability considering human properties, we should pay attention on intelligent aspect of sustainability as well as the survival aspect.

If it be so, how ought our “lifestyle” to be? What is a lifestyle that makes our lives worth living? I think it is a way of living in which we can feel that we are needed by other people. In other words, it is important for us to contribute other people, society and the world in order to find the worth of living. In particular, “creative contribution” makes many people happy, which finally leads him/her to satisfy his/her intellectual desires. Therefore, making people creative is essential to address the real sustainability from the intelligent aspect. However, unfortunately, many people cannot actually demonstrate their own creativity. Furthermore, many people are not even aware of their own potential creativity. As a result, it is generally thought that creativity belongs only to few “gifted” people.

Now is the time to democratize creativity. Everybody has unique and valuable creativity. Find, excavate and reveal the buried creativity, and the real sustainability shall be achieved. In this talk, I present significance of creativity support media for achieving democratization of creativity based on my research experiences.

#### 4. On Phronesis and Master-Disciple Education Method in TCM

**Jifa Gu<sup>1</sup>, Rui Gao<sup>2</sup>, Youmei Xu<sup>2</sup>, Yijun Liu<sup>3</sup>**

<sup>1</sup> *Academy of Mathematics and Systems Science, Chinese Academy of Sciences*

<sup>2</sup> *Xiyuan Hospital of China Academy of Chinese Medical Sciences*

<sup>3</sup> *Institute of Policy and Management, Chinese Academy of Sciences*

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**Keywords:** Phronesis, TCM, master-disciple education

**Abstract:**

Nonaka suggested the concept of phronesis and proposed six abilities for realizing it. This paper wishes to summarize these six abilities as process of running phronesis and to describe examples in creating, extending and practicing some academic theories in China. Finally this paper also wishes to use the phronesis to explain the master-disciple education method in Traditional Chinese Medicine (TCM) existed education system.

## 5. Wisdom Web of Things (W2T): Fundamental Issues, Challenges and Potential Applications

**Ning ZHONG**

*Maebashi Institute of Technology, Japan and International WIC Institute, BJUT*

*E-mail: zhong@maebashi-it.ac.jp*

### **Abstract:**

With rapid development of the Internet and the Internet of Things, a new world, called 'hyper world', is emerging by coupling and empowering humans in the social world, information/computers in the cyber world, and things in the physical world. The notion of 'Wisdom Web of Things (W2T)' is a novel vision for computing and intelligence in the post-WWW era, recently put forward by a group of leading researchers from the fields of Web Intelligence (WI), Ubiquitous Intelligence (UI), Brian Informatics (BI), and Cyber Individual (CI). As inspired by the material cycle in the physical world, the W2T focuses on the data cycle, namely 'from things to data, information, knowledge, wisdom, services, humans, and then back to things.' A W2T data cycle system is designed to implement such a cycle, which is, technologically speaking, a practical way to realize the harmonious symbiosis of humans, computers and things in the emerging hyper world. In this talk, we discuss fundamental issues, challenges and potential applications of such a W2T framework.

## 6. A Linked Data Model for Semantic E-books

**Vilas Wuwongse**

*Asian Institute of Technology, Thailand*

*E-mail: vw@cs.ait.ac.th*

### **Abstract:**

An e-book can be treated as a new type of information object with a complex structure in which its content is broken down into atomic units called "content nodes" and semantically linked together to form a hypermedia database. Content nodes can be of different media types such as images, video clips, text, etc. and the content could come from different sources including the LOD (Linked Open Data) cloud. As a result, an e-book could serve as a distributed semantic hypermedia database. This new way of viewing e-books will increase the potential and benefits of e-books. A reader could read them as a well-structured book or query their distributed but connected content as a semantic hypermedia database. Such a view of e-books demands a well-defined data model for their rigorous representation, design, and utilization. A conceptual model for e-books has been developed using RDF (Resource Description Framework) as the modeling language. The data model has been verified to satisfy all major requirements for e-books and support all their necessary operations.

## 7. Information Extraction and Text Summarization in Thai Language

**Thanaruk Theeramunkong**

*SIIT, Thammasat University, Thailand*

*E-mail: thanaruk@siit.tu.ac.th*

### **Abstract:**

In this work, we have studied named entity recognition and text summarization in Thai language. Named entity recognition is a nontrivial and challenging task for information extraction in Thai language since a Thai text has no word, phrase and sentence boundary. In the first work, we have proposed a method to exploit the concept of character clusters, a sequence of inseparable characters, to group characters into clusters and then utilize statistics among characters and their clusters to extract Thai words and then recognize named entities, simultaneously. Integrated of two phases, the word-segmentation model and the named-entity-recognition model, context features are exploited to learn parameters for these two discriminative probabilistic models, i.e., CRFs, to rank a set of word and named entity candidates generated. Moreover, three alternative discriminative probabilistic approaches called (1) phase-independent approach, (2) phase-merging approach, and (3) phase-cascading approach are proposed and compared. In the second work, we study on a number of techniques for construction of a comprehensive summary from multiple documents. Towards summarization of multiple news articles related to a specific event, we studied a method to find relationship among entities using association rule mining and proposed a graph-based summarization method which constructs a summarization graph by modelling text portions as nodes and relationships among them as edges. An ideal summary should include only important common descriptions of these articles, together with some dominant differences among them.



## Session I

0044 Wulanqigige, Susumu Kunifuji, Tessai Hayama

*Development and Evaluation of Creativity Test for Chemistry Education in a Secondary School Level*

0047 Takeo Higuchi, Takahiro Kawaji

*Study of Creative Thinking and Writing by Idea-Marathon System With Proposal of Virtual Oblivion Memory Store*

0065 Hao Wang, Yukio Ohsawa

*iChance: Towards New-Generation Collaborative Creativity Support System for Advanced Market Innovation*

## 0044 Development and Evaluation of Creativity Test for Chemistry in a Junior High School Level

**Wulanqiqige, Susumu Kunifuji, Tessai Hayama**

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**Keywords:** Evaluation of creativity, Secondary school, Chemistry education, Scholastic attainments

### **Abstract:**

The understanding, the memory, and the application of chemical knowledge, the learner's independent idea, the concern, the search, and the evaluation of creativity are now emphasized in the secondary school chemistry education guidelines in China. But so far a few researches have been carried out on the development and evaluation of creativity in a chemical subject. Therefore, the present study has made an attempt to develop and evaluate the creativity test for the chemistry education in the secondary education, and to verify the utility. The result of the verification experiment shows that the creativity was measured by S-A creativity inspection and was reported in the existing literature a low correlation with scholastic attainments. Conversely, the finding in our study, of Creativity test of chemistry knowledge" was found a high correlation with scholastic attainments of the chemistry. The questionnaire survey method has been used as instrument for the taste to understand the problem of Creativity test of chemistry knowledge.

## 0047 Study of Creative Thinking and Writing by Idea-Marathon System with Proposal of Virtual Oblivion Memory Store

**Takeo Higuchi<sup>1,2</sup>, Takahiro Kawaji<sup>3</sup>**

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**Keywords:** Idea-Marathon System, Creative Thinking and Writing, Virtual Oblivion Memory Store

### **Abstract:**

Through various lectures and training of Idea-Marathon System (IMS) for many years, we found that creative thinking and writing in package are vital to study, research and business. In this paper, after we explain the basic rules of IMS, we propose hereunder an official comment from faculty of University of Electro Communications, who also has been continuing IMS since 2007. In addition in this paper, we proved effect of Creativity in Idea-Marathon System for university students in 2011 on quantitative analysis. IMS is a process to make customization of creative thinking and writing. While we continue IMS, we found one question how we can remember some memories which we thought in our brain and lost once without our knowledge. From the fact we often can remember or retrieve lost memories, we induce one conclusion of existence of other memory areas or processes in our brain to keep and recover the lost memories, that is a temporary memory store where all the lost memories are sent from Sensory Register and Short-Term Memory proposed by Atkinson & Shiffrin[1]. Based on the concept of them, we propose “Virtual Oblivion Memory Store (VOMS)”. With this VOMS model, we can explain that we can retrieve lost memories. And at the end we propose the future study of VOMS for application to educations.

## 0065 iChance: Towards New-Generation Collaborative Creativity Support System for Advanced Market Innovation

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**Keywords:** iChance, Creativity Support System, Idea Discovery, 4W-IMG

### **Abstract:**

In the dynamic and competitive market, enterprises have to timely launch new as well as creative products and services to fulfill the consumers' demands for occupying much more market share. Therefore, most of them regard innovation as their strategic slogan. This paper presents a novel Web-based creativity support system named iChance for collaborative innovation based on Idea Discovery Model (IDM). iChance includes four main functional modules: (1) scenario-based innovation module, (2) requirement module, (3) communication module and (4) toolbar module. The whole operating procedure of iChance is in accordance with 4W-IMG (Innovators' Market Game) approach. The analytic result of case study shows the effectiveness of iChance for creative support. Besides, compared with traditional or previous creativity support system, iChance is a novel online multiplayer role-playing innovation platform that supplies users more joyful and innovative circumstance with better human-computer interaction.

## Session II

0036 Zhigang Cao, Mingmin Yang, Xinglong Qu, Xiaoguang Yang

*Rebels Lead to the Doctrine of the Mean: Opinion Dynamic in a Heterogeneous DeGroot Model*

0043 Zhenpeng LI, Xijin TANG

*Polarization and non-positive social influence: A Hopfield Model of Emergent Structure*

0071 Xiaowei Zhao, Haoxiang Xia

*Cooperation with Tolerance Based on Long-term Return in Multi-Agent System*

## 0036 Rebels Lead to the Doctrine of the Mean: Opinion Dynamic in a Heterogeneous DeGroot Model

**Zhigang Cao<sup>1</sup>, Mingmin Yang, Xinglong Qu, Xiaoguang Yang**

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**Keywords:** opinion dynamics, the DeGroot model, naive learning, opinion dynamics, rebels, the doctrine of the mean

### **Abstract:**

We study an extension of the DeGroot model where part of the players may be rebels. The updating rule for rebels is quite different with that of normal players (which are referred to as conformists): at each step a rebel first takes the opposite value of the weighted average of her neighbors' opinions, i.e. 1 minus that average (the opinion space is assumed to be  $[0, 1]$  as usual), and then updates her opinion by taking another weighted average between that value and her own opinion in the last round. We find that the effect of rebels is rather significant: as long as there is at least one rebel in every closed and strongly connected group, under very weak conditions, the opinion of each player in the whole society will eventually tend to 0.5.

## 0043 Polarization and non-positive social influence: A Hopfield Model of Emergent Structure

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**Keywords:** Opinion Dynamics, Social Influence, Hopfield Network Model, Polarization

### **Abstract:**

In this study, we classify three types of social influence from the perspective of social identity, and investigate to what extent that the non-positive social influences affect group opinion polarization based on the Hopfield neural network model. Through simulation, we observe that opinion in a group would self-organize into two polarization pattern, under the condition of no imposing external intervention, which is entirely different from the result of drift to an extreme polarization dominant state with single homogenous influence. This result suggests non-positive social influence can promote group bipolarization opinions, which may account in part for the widely observed well-matched voting phenomenon in the real world.

## 0071 Cooperation with Tolerance Based on Long-term Return in Multi-Agent System

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**Keywords:** Cooperation, Long-term Return, Reciprocal Altruism, Multi-Agent System

### **Abstract:**

The cooperation among the agents is critical for Multi-agent systems (MAS). Most of the time, agents cooperate with each other for long-term return and build such partnership based on reciprocal altruism. However, the partnership could be broken easily when one agent did not or refused to grant a favor to the other one. Will it be helpful for MAS or individual agent, if agent has controllable level of tolerance? That is the main question of this paper. In order to find an answer to this question, we propose a cooperative strategy, “flexible reciprocal altruism model (FRAM)”. In FRAM, agent has a controllable rate of tolerance and is willing to grant favors for long-term return. Agent can determine whether it should grant a favor to another agent based on their past interactions. As a result, granting unmatched favors by accident will not break the relationship between two agents in our model. Experiments show that our strategy performs well with different cost/value tradeoffs, numbers of agents, and load.



## Session III

0033 Masanori Okada

*Educational environments that incentivize experience*

0048 Sommart Aungkaseraneekul, Chuleerat Jaruskulchai

*Automated Thai-Language Essay Scoring with Unsupervised Learning Algorithm*

0051 P.Ballungpattama, C.Nattee, Thanaruk Theeramunkong

*A Consonant-only Thai Input Method*

0061 Tessai Hayama, Susumu Kunifuji

*Information Provision Modules to Support Creation of Slides with Easily Understandable Presentation*

## 0033 Educational environments that incentivize experience

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**Keywords:** education, extracurricular activity, rewarding systemic card, experience, post e-learning

**Abstract:**

Educational environments comprise curricular and extracurricular activities. When academic achievement declines, curricular activities tend to be emphasized. Widespread incorporation of IT has resulted in increased research and development related to e-learning systems and their use in curricular activities. Post e-learning systems are expected to play a role not just as content delivery systems, but a sort of catalyst that support curricular activities through the promotion of extracurricular activities. At our school we are investigating indirect influences of extracurricular activities on curricular activities by analyzing the effects of micro-incentives on student volunteer activities and personal development. The current system has only been in place since fiscal 2010, but here we present a report of its results to date.

## 0048 Automated Thai-Language Essay Scoring with Unsupervised Learning Algorithm

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**Keywords:** Automated, Thai-Language, Essay, Scoring, EM Algorithm, Cobweb Algorithm, Un-supervised Learning

### **Abstract:**

The concept of automatic essay grading is comparable to the documents clustering or classification according to a set of essays. However, the preparation of the training data need to include every category of answer sets which impractical. The training data usually includes the appropriate essays and it might be available only for some types of data. Additionally, the number of clusters may not be known in advantage. Thus, EM and Cobweb are used to discover automatic the number of clusters for each question. The similarity between each cluster and solution is used to grade the student's answers. Experiment is tested on short descriptive answers of object-oriented programming with total of fifty five students' answers. The result of this experiment revealed EM to return a superior average accuracy value with 80.57%.

## 0051 A Consonant-only Thai Input Method

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**Keywords:** Input Method, Thai Language, Soft Keyboard

### **Abstract:**

Inputting Thai text via a virtual keyboard on Smartphones with touch screen is not a trivial task for most of users due to the number of Thai characters and the limited size of the mobile phones. This paper presents a new layout for Thai virtual keyboard, and a new approach for handling Thai text input on smartphones with touch screen. The proposed layout shows only Thai consonants instead of the combination of Thai consonants and vowels. User inputs only a sequence of consonants that is a part of the intended word. We then propose an approach based on the concept of inverted index and Boolean retrieval algorithm from information retrieval techniques to choose a set of most appropriate words before presenting to the user. We compare the proposed approach and the existing Thai keyboards in term of the number of keystrokes required for inputting words. The experimental results show that the proposed approach helps save 71.29%.

## 0061 Information Provision Modules to Support Creation of Slides with Easily Understandable Presentation

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**Keywords:** Creativity Support, Creating Presentation Slides, Slide Search, Interactive User Interface, Web Database

### **Abstract:**

Including visual information in slides is one of the most important factors for enabling the audience to easily understand the content of a slide presentation. However, it is difficult for an inexperienced preparer to improve the presentation of slides without adequate experience and awareness of the requirements of a good slide. Therefore, we developed Presentation Gadgets, which consists of modules that can be used to support the creation of slides that represent information in an audience friendly manner. Presentation Gadgets provides information on web-based slides, web pages, web news, and web images, thus supporting replacement of content on slides with visual representations and illustrations of key points, and insertion of common topics. In addition, it helps identifying slides that need improvement. To construct the above modules, we developed a novel slide search method and slide ranking method. Furthermore, to allow easy access to information, Presentation Gadgets has a user interface that automatically creates queries from the selected slide text or speech text that is recognized by a speech recognition engine. Thus, using Presentation Gadgets, an inexperienced slide preparer can effectively create slides that are easily understandable because he/she can interactively refer to various information resources relating to the slide content based on the situation.

## Session IV

0002 Taizo Miyachiy, Takashi Fruhataz, Mitsuo Hirokawa, Saiko Iga, Rakushi Hojo

*Lifelong Learning by Wide Auto-flow Ehon and Face Position Recognition*

0050 Kitti Koonsanit, Chuleerat Jaruskulchai

*Performance Comparison of Urban Areas Segmentation on Hyperspectral Imagery Using Clustering Algorithms*

0052 Eakasit Pacharawongsakda, Thanaruk Theeramunkong

*Improving Classifier Chains for Multi-label Classification using Dual Space Reduction*

0054 Pimnapa Atsawintarangkun, Nongnuch Ketui, Thanaruk Theeramunkong, Choochart Haruechaiyasak

*Analysis of Thai Elementary Discourse Units and Their Detection*

## 0002 Lifelong Learning by Wide Auto-flow Ehon and Face Position Recognition

**Taizo Miyachi<sup>1</sup>, Takashi Fruhataz<sup>2</sup>, Mitsuo Hirokawa, Saiko Iga<sup>3</sup>, Rakushi Hojo<sup>4</sup>**

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**Keywords:** Lifelong learning, Digital ehon, Learning experiences over several generations, Face recognition, Auto-flow in multiple screens.

### **Abstract:**

People can learn a lot of things from pioneer's experiences for unexpected situations. We propose a digital Wide Ehon with multiple view points for pleasant Lifelong Learning (WELL). WELL allows people without digital device literature to easily start learning by reviewing an automatic flow of lots of scenes described in a digital rolled ehon and to pleasantly find good start topics of an interesting study of new worlds based on their preferences. Vivid panorama descriptions of people and the cities with interesting knowledge corresponding to each generation automatically flow over multiple screens in user's pace. The speed of the flow can be easily adjusted for the user's pace by just sliding a mouse to the left/right. WELL can also be applied for study by disabled persons sitting on wheelchairs. Eye angle 170 degrees shows the high reality. Multiple views and multi-angle 2D images by face position recognition function enable users to easily understand the 3D structure of a target and how to use it. Users can acquire deep knowledge in auto-annotation in text, picture and video without searching by on-mouse operations on information icons. Quiz type of interactions gives the users chances to think about target fields and the feeling of achievement of the study. We also report observational study experimental results by WELL in a university festival, church and a hospital in Honolulu in Hawaii.

## 0050 Performance Comparison of Urban Areas Segmentation on Hyperspectral Imagery Using Clustering Algorithms

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**Keywords:** segmentation, clustering, hyperspectral imagery, satellite imagery

### **Abstract:**

Segmentation of the interesting region from the areas can help experts to assess this wealth of the information region more easily. Moreover, the identifiable boundary of the region can help interpreting the better results of visualization. In the hyperspectral imagery, the urban areas are usually large and a lot of bands. The segmentation using clustering approach is usually suitable for these images with the mentioned characteristics. It has been reported that different clustering techniques, namely K-means, DBSCAN, Expectation-Maximization and COBWEB algorithms are used to segment the urban areas. A number of papers and articles have been published regarding the above clustering subjects. However, none of the approaches can be employed to process in hyperspectral imagery because they were applied to only a few bands. In this paper, we present the experimental studies for urban areas segmentation of hyperspectral imagery using all bands represented as attributes for clustering methods. We tested our study using four different techniques based on i) Kmeans ii) DBSCAN iii) EM and iv) COBWEB algorithms. The performances of these four different techniques on the urban areas segmentation and visualization, which are applied on a hyperspectral imagery dataset, are compared and presented. The experimental results show that segmentation of urban areas using the DBSCAN algorithm technique provides better quality than the EM, K-means and COBWEB methods, respectively.



## 0052 Improving Classifier Chains for Multi-label Classification using Dual Space Reduction

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**Keywords:** Multi-label classification, Classifier Chains, Dimension Reduction, Binary Relevance

### **Abstract:**

Classifier Chains (CC) is used to improve classification performance in the environment of multi-label classification where multiple classes can be assigned to an object. However, its effectiveness is usually sacrificed due to curse of dimensionality in the feature space and sparseness of dimensionality in the label space, and also high computational cost when there exists a high number of dimensions. As a solution, this paper presents a so-called Dual Space Reduction (DSR) method to reduce dimensions in the dual spaces, i.e., the feature space and the label space, using Singular Value Decomposition (SVD). The method constructs the covariance matrix between the feature space and the label space, project both of them into a single reduced space, and then perform prediction on the reduced space. A number of experiments evidence that multi-label prediction on the reduced spaces for this reduction approach can obtain better classification performance as well as faster computation, compared to the prediction using the original spaces, compared to the original CC and the well-known dimension reduction method, called PLST.

## 0054 Analysis of Thai Elementary Discourse Units and Their Detection

**Pimnapa Atsawintarangkun<sup>1</sup>, Nongnuch Ketui<sup>1</sup>, Thanaruk Theeramunkong<sup>1</sup>,  
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**Keywords:** Thai EDUs Segmentation, Thai Sentence Segmentation, Discourse Segmentation

### **Abstract:**

Discourse segmentation is one of inevitable processes towards semantics-based text processing. However, it is difficult to discover discourse units in languages without explicit word boundaries, such as Japanese, Chinese, and Thai, and even more difficult in languages without sentence boundaries, such as Thai. Up to present, there have been no effective method for extracting discourse units from a Thai running text. In this paper, we propose a framework for breaking down a Thai text into a set of discourse units. In this framework, we first define elementary discourse units (EDUs) in Thai language and then present a three-stage process to automate the detection of EDUs; word/chunk segmentation, part-of-speech (POS) tagging and EDU boundary detection. An evaluation was performed on a corpus of 1,970 Thai news articles with 31,169 discourse units. The result shows that the token-based feature set yields better performance than the entity/POS-based feature set. The best performance is obtained with the combination of these two feature sets.

## Session V

0037 Md. Shiful Islam, Susumu Kunifuji, Tessai Hayama, Motoki Miura

*Towards Building an E-learning and Knowledge Management Adoption Model*

0053 Cui Liang, Kamiyama Motoyuki, Matsuda Noriyuki, Seta Kazuhisa, Ikeda Mitsuru

*A Model of Collaborative Learning for Improving the Quality of Medical Services*

0066 Tanatorn Tanantong, Ekawit Nantajeewarawat, Surapa Thiemjarus

*Towards ECG Monitoring Through Body Sensor Networks Using an Arrhythmia Indicator Ontology*

0068 Shuangling Luo, Zhaoguo Xuan

*A Conceptual Analysis of Interpersonal Knowledge Communication*

## 0037 Towards Building an E-learning and Knowledge Management Adoption Model

**Md. Shiful Islam<sup>1</sup>, Susumu Kunifuji<sup>1</sup>, Tessai Hayama<sup>1</sup>, Motoki Miuraz<sup>2</sup>**

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**Keywords:** E-learning, Knowledge Management, EL-KM adoption model, Theoretical implications, Practical implications

### **Abstract:**

In this paper, we propose an electronic learning (EL) and knowledge management (KM) adoption model for sharing, updating and adopting the essence of EL and KM. The model has been built using the existing literature, as well as data and information of face-to-face interviews of 17 EL and KM research scholars worldwide, from among the participants of two international conferences held in 2010 in Japan and Thailand. We also discuss the theoretical and practical implications of the model, and offer some suggestions for practical improvement of EL and KM systems. We use the qualitative research approach and inductive reasoning for this study. Findings show that the proposed model will directly impact EL and KM academics, as well as practitioners, through the adoption of EL and KM systems, and Knowledge Science will be enriched by nurturing new concepts and facilitating more opportunities to enhance collaborative, innovative, open and distributed knowledge sharing, and knowledge- adopting culture.

## 0053 A Model of Collaborative Learning for Improving the Quality of Medical Services

**Cui Liang<sup>1</sup>, Kamiyama Motoyuki<sup>2</sup>, Matsuda Noriyuki<sup>3</sup>, Seta Kazuhisa<sup>4</sup>, Ikeda Mitsuru<sup>1</sup>**

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**Keywords:** Medical Service, Knowledge Co-creation, Metacognition, Thinking Skills

### **Abstract:**

We will create an educational program that practices a knowledge co-creation process by training thinking skills of diverse persons in the medical service field. They discuss problems that often no definite answer from different viewpoints. They could take each other's viewpoints into account, and create high quality knowledge by taking advantage of their differing viewpoints and synthesizing them. Our final goal is to construct a methodology of the educational program and its main principles by knowledge scientifically approaching it, and designing, executing, analyzing and revising it continuously.

## 0066 Towards ECG Monitoring Through Body Sensor Networks Using an Arrhythmia Indicator Ontology

**Tanatorn Tanantong, Ekawit Nantajeewarawat, Surapa Thiemjarus**

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**Keywords:** Arrhythmia classification, Arrhythmia indicator ontology, Knowledge-based system, Electrocardiogram, Body sensor network

### **Abstract:**

Body Sensor Network (BSN) provides a promising platform for pervasive healthcare monitoring. Based on rules and ontologies, this paper proposes a framework for predicting types of arrhythmia from electrocardiogram (ECG) signals acquired using a BSN node. Using terms in an ECG signal ontology, ECG signals are annotated by locating the positions of elementary waves, including their onset, offset, and peak positions. Rules are used for extracting features, e.g., heart rate variability, PR intervals, RR intervals, and QRS intervals from annotated signals. An arrhythmia indicator ontology is constructed in order to define concepts representing different characteristics of ECG waveforms, which are then used for defining necessary and sufficient conditions for arrhythmia classification of signal portions. Five categories of beat types and nine rhythm types are considered in our experimental study. The resulting overall accuracy for arrhythmic beat classification is 97.10%, and that for arrhythmic episode classification is 97.89%. Using standard semantic web ontology and rule languages, i.e., OWL and SWRL, for rule and ontology representation, knowledge content in this framework can be integrated with other existing knowledge sources for retrieval of related information, e.g., recommended treatment.

## 0068 A Conceptual Analysis of Interpersonal Knowledge Communication

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**Keywords:** Intrinsic Knowledge, Reified Knowledge, Knowledge Communication

### **Abstract:**

In this paper we argue that there are two distinctive existence forms or states of knowledge, i.e., knowledge in human mind and knowledge in media and we term the former "Intrinsic Knowledge" (IK) and the latter "Reified Knowledge" (RK). Based on this dichotomy, interpersonal knowledge transfer or "knowledge communication" is modeled as a communicative process that is comprised of two stages, namely the IK-to-RK transformation at the sender side and the RK-to-IK transformation at the recipient side. Comparing with Shannon's general communication model, the IK-to-RK transformation in knowledge communication corresponds to the "encoding" stage of general communication, while the RK-to-IK transformation is the "decoding" stage. Based on the two-stage model of knowledge communication, a further analysis is given on reified knowledge, which intermediates the sender and the recipient in knowledge communications. Inspired by the idea of separating "abstract control knowledge" from "domain knowledge" in the AI/ES discipline, we argue that the relational model suggested by Clancey for knowledge in expert systems is universal for the reified form of knowledge. Thus a three-tier model for the reified knowledge is suggested and practical implications for knowledge communications are discussed.

## **Session VI**

0025 Andrzej M.J. Skulimowski

*Fusion of Expert Information on Future Technological Trends and Scenarios*

0046 Mingmin Yang, Xinglong Qu, Zhigang Cao, Xiaoguang Yang

*Innovation Governs Everything Eventually: An Extension of the DeGroot Model*

0067 Rong Zhang, Lili Rong

*Research on Knowledge Transfer Mode in BA networks*



## 0025 Fusion of Expert Information on Future Technological Trends and Scenarios

**Andrzej M.J. Skulimowski**

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**Keywords:** Group Decision Making, Knowledge Bases, Foresight Support Systems, Discrete Control Models, Intelligent Decision Support Systems

### **Abstract:**

This paper presents an intelligent knowledge-based system with a soft-computing-based analytical engine capable of gathering, updating and integrating information autonomously. Its main goal is to investigate, elicit, and apply the rules and principles that govern the evolution of selected information technologies (IT) and their applications. The data and analytical models are structured in layers that correspond to the degree of generality of information on the technology evolution, implementations, markets and management. The demand for information technologies and end-user products, as well as usage scenarios, are modelled as the 'Information Society' layer, which contains state variables that characterize the demographic, educational and global economic trends, as well as market factors governing the demand for and use of IT in a digital society. The next layer organizes knowledge about research influencing the development of information technologies and about the technologies themselves. The 'industry' layer contains information about software technologies, developer tools, implementations and services, layers. The mutual impacts of each of the 'Information Society' components and their impact on technological evolution are represented within a discrete-time control model. The relations between layers and the resulting dynamical models can be used to derive trends, forecasts, scenarios, and recommendations for decision makers. The system is the main component of the recent IT foresight support system. It is capable of accommodating uncertain information, coming a.o. from collective experts' judgments, Delphi research and forecasts. Different uncertainty modelling techniques can be used simultaneously, e.g. probability-based models for market data can be combined with rough classifications, and possibilistic data provided by respondents to Delphi questionnaires. We will provide an example showing how the above system can be used to support technological investment decisions concerning the development of recommenders for 3D-based e-commerce.

## 0046 Innovation Governs Everything Eventually: An Extension of the DeGroot Model

**Mingmin Yang<sup>1</sup>, Xinglong Qu, Zhigang Cao, Xiaoguang Yang**

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**Keywords:** social network, non-Bayesian learning, opinion dynamics, DeGroot model

### **Abstract:**

We study the DeGroot model for continuous-opinion dynamics under the influence of innovations. In the original model, individuals' opinions, after given their initial values, evolve merely according to the given learning topology. The main contribution of this paper is that external innovation effects are introduced: each individual is given the opportunity to change his/her opinion to a randomly selected opinion according to a given distribution on the opinion space. It turns out that all the classical results of the DeGroot model are violated in this new model. We prove that convergence can still be guaranteed in the expectation sense, regardless of the learning topology. We also study the steady distributions of opinions among the society and the time spent to reach a steady state by means of Monte-Carlo simulations.

## 0067 Research on Knowledge Transfer Pattern in BA networks

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**Keywords:** knowledge management, patterns of knowledge transfer, computer simulation, organization, BA networks

**Abstract:**

There are series of patterns between actors as they transfer knowledge with each other. Different patterns will totally lead to different efficiency and results. This paper generalizes nine kinds of patterns of knowledge transfer between actors, then sets up various organizations based on the patterns. We simulate knowledge transfer in BA networks and compute the average knowledge storage and knowledge variance according to the rules of transfer. The simulation experiment shows that different patterns of knowledge transfer will affect efficiency of knowledge transfer. When there are entirely two-way strong connections in the organizations, knowledge transfer will be the fastest. Organizations of greater density are efficient, in which different patterns have less influence to knowledge transfer. And while there are more one-way connections, the variance will be much bigger; contrary to it the variance will be small.

## ABOUT BEIJING

### City

Beijing, also known as Peking, is the capital of the People's Republic of China and one of the most populous cities in the world. The city is the country's political, cultural, educational and military center and home to the headquarters of most of China's largest state-owned companies. Governed as a municipality under the direct administration of the national government, Beijing is divided into 14 urban and suburban districts and two rural counties. It is a major transportation hub, with dozens of railways, roads and motorways passing through the city, and the destination of many international flights to China.

Few cities in the world have served as long as the political and cultural centre of an area as immense. Beijing is one of the Four Great Ancient Capitals of China. It has been the heart of China's history for centuries, and there is scarcely a major building of any age in Beijing that does not have at least some national historical significance. The city is renowned for its opulent palaces, temples, and huge stone walls and gates. Its art treasures and universities have long made it a centre of culture and art in China.

### Geography

Beijing is situated at the northern tip of the roughly triangular North China Plain, which opens to the south and east of the city. Mountains to the north, northwest and west shield the city and northern China's agricultural heartland from the encroaching desert steppes. The northwestern part of the municipality, especially Yanqing County and Huairou District, are dominated by the Jundu Mountains, while the western part is framed by the Xishan Mountains. Mount Dongling in the Xishan ranges and on the border with Hebei is the municipality's highest point, with an altitude of 2303 m.

Beijing has a whole area of 16808 sq km, stretching 160 kilometers from east to west and over 180 kilometers north to south. 38% of it is flat land and 62% mountains.

Major rivers flowing through the municipality include the Yongding River and the Chaobai River, part of the Hai River system, and flow in a southerly direction.

### Weather

The city has a rather dry, monsoon-influenced humid continental climate characterized by hot, humid summers due to the East Asian monsoon, and generally cold, windy, dry winters that reflect the influence of the vast Siberian anticyclone. Spring can bear witness to sandstorms blowing in from the Mongolian steppe, accompanied by rapidly warming, but generally dry, conditions. Autumn, like spring, sees little rain, but is crisp and short. Precipitation averages around 570 mm (22.4 in) annually, with the great majority of it falling in the summer months.

### Population

The registered population of Beijing Municipality consists of people holding either Beijing permanent residence hukou permits or temporary residence permits. The 2010 census revealed that

the total population in Beijing had reached 19.6 million.

### People & Religion

Most (roughly 95%) of Beijing's residents belong to the Han Chinese majority. Ethnic minorities include the Manchu, Hui, and Mongol. A sizable international community resides in Beijing, many attracted by the highly growing foreign business and trade sector, others by the traditional and modern culture of the city. In recent years, there has been an influx of South Koreans, an estimated 200,000 in 2009, predominantly for business and study.

China is a country with religious freedom and respects every religion. Buddhism, Taoism, Islam, Catholicism and Christianity are religions found in Beijing.

### Temperature

In October, Beijing's temperature typically range from 5 to 22 degrees C (41-72F).

City	Climate	Average Monthly Temperature, Rainfall & Days of Rain											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Beijing	Average(°C)	-4.6	-2.2	4.5	13.1	19.8	24.0	25.8	24.4	19.4	12.4	4.1	-2.7
	Rainfall(mm)	3.0	7.4	8.6	19.4	33.1	77.8	192.5	212.3	57.0	24.0	6.6	2.6
	Days	2.0	3.1	4.1	4.6	5.9	9.7	14.1	13.2	6.8	5.0	3.7	1.6

### Economics

Beijing is amongst the most developed cities in China, with tertiary industry accounting for 73.2% of its Gross Domestic Product (GDP); it was the first post industrial city in mainland China. Beijing is home to 26 Fortune Global 500 companies, the third most in the world behind Tokyo and Paris. In 2010, Beijing's nominal GDP reached 1.37 trillion RMB. Its per capita GDP was 78,194 RMB. In 2009, Beijing's nominal GDP was 1.19 trillion RMB (US\$174 billion), a growth of 10.1% over the previous year. Its GDP per capita was 68,788 RMB (US\$10,070), an increase of 6.2% over 2008.

### Banking

Beijing bank hours are generally Monday through Friday, 9:00 am to 5:00pm, through certain banks have shorter Saturday and Sunday hours. One branch of Bank of China is at the northeast corner of Baofusi Bridge..

### Post Office

Beijing postal service is efficient and reliable with branches in most major towns throughout the city. Beijing post offices are open M-F 8:30am-5:00pm. The nearest post office is in the Apartment of GUCAS.

### Time

Beijing Standard time is GMT+8. Beijing does not observe daylight savings.

### Electricity

Electrical outlets in Beijing are charged to 220V at 50 cycles per second, which is compatible with appliances from the Europe, but not those from the US and Japan. While most computer ca-

bles have adaptors for voltage, visitors from the U.S. and those not on the 220/50 v. will have to bring adaptors to run most other appliances. Outlets in Beijing generally feature flat, three holes (ground outlets); there are also two pronged plugs, though some feature holes for round plug ends.

### Library service

Library services are available from Siyuan Building. It's at the second floor. The library offers a comprehensive range of library services during the following times: Monday to Thursday 08:00-22:00, Friday 08:00-17:00, Saturday 08:30-16:30 and Sunday 08:30-12:00.

All necessary ID and documentation must be shown when visiting the library for the first time, and when collecting your card. Academic staff and research students from outside AMSS can apply for an Academic Permit for reference use of the Library. Applicants will be asked to show proof of their current status when they first visit the library, when collecting, and when renewing membership. If your ID card does not clearly indicate your status and show an expiry date to indicate that it is valid for the current academic year, please also bring a letter of introduction from your department to conform the relevant details. If you still experience problems in gaining access to the Library, please contact organizing chair Prof. Xijin Tang (email: [xjtang@iss.ac.cn](mailto:xjtang@iss.ac.cn)).

<http://library.amss.ac.cn/newweb/index.asp>

## **ABOUT AMSS-CAS**

Academy of Mathematics and Systems Science (AMSS) in the Chinese Academy of Sciences (CAS), founded in December 1998, is integrated with Institute of Mathematics (established in 1952), Institute of Applied Mathematics (established in 1979), Institute of Systems Science (established in 1979) and Institute of Computational Mathematics and Science/Engineering Computing (established in 1995). Professor Yang Lo (Member of CAS) was the first president of AMSS, and Professor Guo Lei (Member of CAS) is the current president.

AMSS is a national comprehensive academic research center of mathematics and systems science. The strategic objectives of AMSS are to make important, original and pivotal research results, and to bring up academic leads and talents in the field of mathematics and systems science, gearing the research to the international scientific frontiers and the national strategic demands. The target of AMSS is to make a great influential research center in the world, a famous training center for advanced researchers, and an important researching and consulting center for national economy and the construction of national defense issues in the field of Mathematics and Systems Science.

Besides the four institutes, AMSS possesses the State Key Laboratory of Scientific and Engineering Computing, Key Laboratory of Management, Decision and Information Systems of CAS, Key Laboratory of Systems and Control of CAS, Key Laboratory of Mathematics Mechanization of CAS, the Morningside Center of CAS, and the Center for Forecasting Science of CAS. AMSS has set up several new research centers based upon some intersecting disciplines in recent years. AMSS now has 15 Members of CAS, 2 Members of CAE (Chinese Academy of Engineering) and 5 Fellows of the Third World Academy of Sciences. There are graduate students, doctors and post-doctors, altogether about 400 in AMSS.

In the past years, the scientific personnel of the four institutes have made important contributions to the country's development of Chinese mathematics and systems science as well as contributions to national economy and national defense. They have won more than 400 scientific awards, including one National Top Science and Technology Prize (Wentsun Wu), 4 first level National Natural Science Awards and A number of important international awards. For some of its important research achievements in applied science, AMSS has been acknowledged by the central government leaders and relevant departments of application. This has proved the important role of mathematics in the national economy and defense.

AMSS has established exchange and cooperation relationship with many academic institutions abroad, and received more than 300 visitors both home and abroad each year. AMSS has a library with abundant collection in mathematics and systems science, up to more than 200,000 books, and an advanced system of computers and network.

The Chinese Mathematics Society, the Operations Research Society of China, and the Systems Engineering Society of China, etc. set up their offices in AMSS. AMSS sponsors 14 academic journals.

## ABOUT ISS-CAS

Established in October 1979, the Institute of Systems Science is mainly engaged in basic research in systems science, mathematics and interdisciplinary subjects related to systems science as well as application oriented basic research. Chinese famous scientists Guan Zhaozhi (KWAN Chao-chi), Wu Wenjun (Wu Wen-tsun) and Xu Guozhi (Hus Kuo-chih) are the main founders of the institute. Professor Guan Zhaozhi was the first director of the institute and professors Cheng Ping, Chen Hanfu and Guo Lei were the subsequent directors of the institute. Professor Gao Xiao-Shan and professor Zhang Jifeng are currently the director and the deputy director of the institute respectively.

The institute of Systems Science has three key laboratories of CAS, two research groups, and two research centers of AMSS. The institute has a strong and spirited research team. Among 64 staff members in the institute, 56 are faculty members, including 6 academicians, 2 fellows of the Third World Academy, 2 IEEE fellows, 29 professors, and 11 recipients of the National Science Fund for Distinguished Youth Scholars and Hundred Talents Program of CAS.

The main research fields of the institute include systems and control, mathematical mechanization, operational research and management, statistical science, discrete mathematics, etc.

The institute has strong international connections as well as excellent interaction with local industry and government departments. Research in the institute is strengthened by streams of visitors who arrive to work on collaborative research with the institute faculty.

In the past years, the scientific personnel in our institute have made important contributions to the country's development in systems science and mathematics. They have won 7 important international scientific awards, 1 National Premium Science and Technology Award, 8 National Natural Science Awards, 11 National Science and Technology Progress Awards, 5 First Prizes of CAS Natural Science Award, 6 first Prizes of CAS Science and Technology Progress Award, 2 First Prizes of CAS Science and Technology Achievement Award, 5 CAS Great Achievement Awards, 1 CAS Distinguished Science and Technology Achievement Award and many other important awards.

The institute is responsible for graduate students education. Over the past 25 years, 287 and 262 students have obtained their PhD or Master's degrees here, and most of them went to universities, companies and research institutions, domestic and abroad. Also, the institute is one of the first batch Post Doctor Stations in our country. There are over 100 post-doctors who studied and are studying since 1987 in the institute.

Besides, the institute currently undertakes the editing and publication of six scientific journals: Journal of Systems Science and Mathematical Science, Journal of Systems Science and Complexity (Springer-Verlag), Systems Engineering: Theory and Practice, Control Theory & Applications, Journal of Control Theory & Applications, and Mathematics in Practice and Theory.



## How to Get to the Conference Site

KICSS'2011 will be held at Academy of Mathematics and Systems Science (AMSS), Chinese Academy of Sciences (CAS). Here we just say how to reach AMSS, CAS.

**AMSS is at the northeast corner of the Basic Scientific Research Campus(基础科学园区). And the campus is in the southwest of Baofusi Bridge(保福寺桥) at North 4 Ring Road(北四环). Whichever vehicle you take, the Baofusi Bridge(保福寺桥) is the most important location for you to find AMSS.**

At the North Gate of AMSS, there is a bus station named West of Baofusi Bridge (保福寺桥西) where Bus No 26, 47, 79, 85, 466, 641, 660, 913, 740 and T9 stop. At the East Gate of AMSS, there is a bus station named South of Baofusi Bridge(保福寺桥南) where Bus No 319, 79, 86 and 660 stop. And there are two subway stations nearby. One is Zhichunlu Station (知春路站), where you can take Line 10 and Line 13. As shown in figure below, leave AMSS from the East Gate and then turn right, go straight along the Zhichun road to a crossroad until you find the Zhongguancun Donglu (中关村东路) where a famous 4-star hotel Jade Palace Hotel (翠宫饭店) locates at the southwest of the crossroad. Zhichunlu Subway Station (知春路站) is 400 meters east away from the hotel. The 2nd subway station is Zhichunli (知春里站) at the Line 10. It is very close to Jade Palace Hotel.

### 1. From Beijing Capital International Airport

#### a) By Airport Shuttle Bus

It's convenient to take an Airport Shuttle Bus to KICSS'2011 conference site. Please select Route 5 (5线), from Beijing Capital International Airport to Zhongguancun Station (exactly *Zhongguancun Bridge No. 4*, 中关村四桥). The total cost is RMB 16 yuan. The total time is around 90 minutes. If encountering a heavy traffic, it will last longer. The last bus from Airport to Zhongguancun is 21:30. The first one from Zhongguancun to Airport is 5:30 and the last one is 21:00.

Route of Airport Shuttle Bus:

<http://en.bcia.com.cn/traffic/airbus/index.shtml>

As you arrive at the Zhongguancun Station, which just locates at a bridge (Zhongguancun-Bridge No. 4, 中关村四桥) above the North 4 Ring Road (北四环), please walk across to the south side of the road through the pedestrian crossing. Be careful when you cross the road. Then walk east about 50 meters. You will pass a Bus Stop, and then reach the South Gate of the Basic Scientific Research Campus (基础科学园区), where several research institutes of Chinese Academy of Sciences locate.

Please enter into the South Gate and then turn left when you can find a 12-floor grey building at the northeast of the campus. That building is AMSS Siyuan Building, the venue of KICSS'2011.

#### b) By taxi

The total cost is about RMB 120-130 yuan, including the expressway fee. The total time is

around 60 minutes. If encountering a heavy traffic, the cost may be higher. Also the time spent may be longer. Please do tell the taxi driver to bring you to

保福寺桥西南角，中关村东路 55 号，中国科学院数学与系统科学研究院  
Academy of Mathematics and Systems Science, CAS,

AMSS Siyuan Building and Conference Site locates at the southwest to the Baofusi Bridge (保福寺桥).

The Wuke Hotel (物科宾馆) locates in the same campus of AMSS Siyuan building.

The Royal King Hotel (融金国际酒店) locates in the southeast to the Baofusi Bridge. So if you take taxi from the airport, please ask the driver to take a U turn at the Baofusi Bridge.

## 2. From Beijing West Railway Station

### a) By taxi

It may take around RMB 40-50 yuan. The Conference site (AMSS Siyuan Building) is in the southwest corner of the Baofusi Bridge (保福寺桥) at North 4 Ring Road (北四环)

### b) By bus

You can take Bus Line 319. Take off it at Baofusi South Station(保福寺南). Cross the road to the west side, then walk south about 150 meters, you can see the East Gate of the AMSS.

### c) By subway

Since there is no subway line access to Beijing West Station. Then it's too complicated and very difficult to make clear even for local residents.

## 3. From Beijing Railway Station

### a) By taxi

This may cost about RMB 50-60 yuan. The Conference Site is in the southwest corner of the Baofusi Bridge (保福寺桥).

### b) By subway

Get on the subway Loop Line (Line 2) at Beijing Railway Station and then take off it at Xizhimen Station (西直门). Go out of the station through the Exit A, and then you can see the Subway Line 13. Take the Line 13 to Zhichunlu Station (知春路), and then walk west about 500 meters till you see the Jade Palace Hotel (翠宫饭店). Then go north along the road to the North Fourth Ring Road, AMSS is there. Of course, you can take a taxi after you leave the Zhichuanlu Station (知春路).

At Beijing Railway Subway Station, you can buy a ticket valued RMB 2 yuan, and this can take you from Beijing Railway Station to Zhichuanlu Station(知春路).

在北京站乘环线地铁到西直门站，下车从地铁 A 出口出门，进入地铁 13 号线，到达知春路站下车后西行约 500 米至中关村东路，接着北行至四环路即到。

### c) By Bus

There is no direct bus line from Beijing Railway Station to AMSS.

## 4. From Beijing South Railway Station

### a) By taxi

This may cost about RMB 50-60 yuan. The Conference Site is in the southwest corner of the Baofusi Bridge (保福寺桥).

b) By subway

Take the Line 4 at Beijing South Railway Station and then take off at Zhongguancun Station (中关村). Go out of the station through the Northeast Exit B (东北口 B) and then you are in the south side of North 4 Ring Road (北四环). Then walk 1 km or take a taxi or take any bus at the Zhongguancun Yijie (中关村一街) to the West of Baofusi Bridge (保福寺桥西) (just next bus stop).

c) By Bus

There is no direct bus line from Beijing Railway Station to AMSS.

- Due to poor traffic situation in Beijing, all time length is just an estimate. It is very difficult to estimate the time spent as you take bus going around in Beijing city.

## LOCATION MAP





