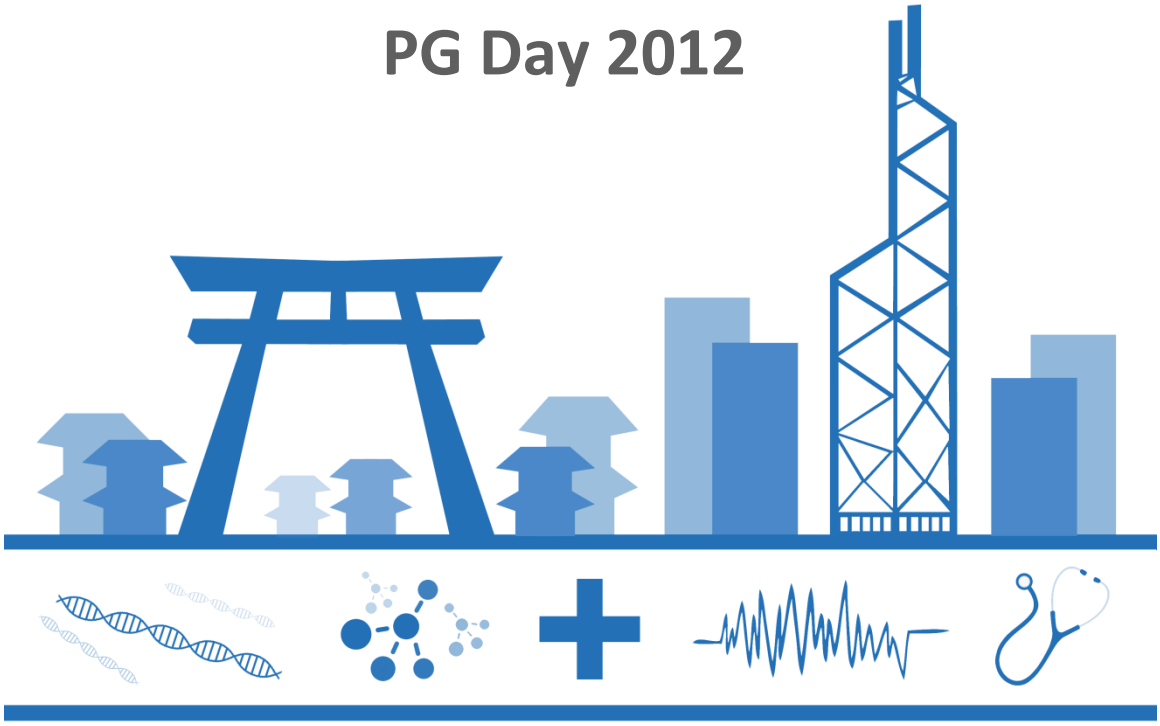
PROCEEDINGS

Kyoto University-HKBU Joint Workshop on Field Informatics

The 15th HKBU - CSD Postgraduate Research Symposium

PG Day 2012



Department of Computer Science
Hong Kong Baptist University
5, 6, 7 March, 2012

京都大学のみなさん、ようこそ香港浸会大学へ。
本日のＰＧ　ＤＡＹにご出席の皆さんに心より歓迎します。
このＰＧ　ＤＡＹを通じて、皆さんにこの大学の研究経験や様々な分野での実務経験を紹介したいと思いますので、どうぞよろしくお願いします。

Welcome all of you who come from Kyoto University!

We are very pleased to invite you to Hong Kong Baptist University for PG day. In PG day, we are able to share our experience to each other in research field.

Hopefully, you can enjoy this.

Welcome Message
From
15th PG Day Committee

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An Introduction to Kyoto University

Founded in June 1897, Kyoto University has a long history and enduring traditions. The main campus is located in the historic city of Kyoto, a center of traditional Japanese culture.

Since its founding, the University has been dedicated to furthering higher education and fostering an atmosphere of free academic exchange. Graduates of the University play important roles in both national and international affairs, as key players in politics, industry, and society.

At present, Kyoto University is comprised of 10 faculties, 17 graduate schools, 14 research institutes, 21 educational institutes and other establishments. Approximately 1,500 of the university's 23,000 students hail from overseas. With students from over 100 different countries and regions, the university's campuses boast a rich cultural diversity.

An Introduction to Hong Kong Baptist University

Established in 1956, Hong Kong Baptist University has over 50 years of experience in providing broad-based and creativity-inspiring education.

HKBU is consistently at the cutting-edge of the sciences and highly reputed for its commitment to the humanities and arts. The University also encourages service to society among its staff and students, making it a beloved part of the Hong Kong community.

At HKBU, education is far more than simply equipping students with professional knowledge and skills. The University is committed to providing Whole Person Education that inculcates intellectual, cultural, social and sporting skills outside the classroom in addition to training the minds within. We are not just grooming the workforce of tomorrow, we are shaping future leaders.

The University offers world-class, innovative undergraduate, taught postgraduate and research postgraduate programmes leading to Masters or PhD degrees as well as associate degree programmes, all tailored to prepare our students for the challenges of a globalised knowledge-based economy.

The 15th HKBU-CSD Postgraduate Research Symposium (PG Day) Program

Kyoto University-HKBU Joint Workshop on Field Informatics March 5 2012 Venue: RRS905, Run Run Shaw Building, Hong Kong Baptist University	
08:45 – 09:00	Onsite Registration
09:00 – 09:10	Opening *Prof. Rick Wong, Vice-President (Research and Development), HKBU*
Keynote Session 09:10 – 10:00 *Session Chair: Prof. Pong Chi YUEN*	Bringing Informatics to Design *Prof. Toru ISHIDA, KyotoU*
	Challenges in Computational Epidemiology *Prof. Jiming LIU, HKBU*
10:00 – 10:15	Coffee Break
Session I 10:15 – 11:15 *Session Chair: Dr. Haibo HU*	Gaming : a Tool for Eliciting Multilogue Communication *Prof. Reiko HISHIYAMA, Waseda University*
	Do Actions Speak Louder than Voices? The Impact of Observational Learning and Electronic Word of Mouth on Consumer Purchase Decisions and the Moderating Role of Consumer Expertise and Consumer Involvement *Dr. Bo XIAO, HKBU*
11:15 – 11:30	Coffee Break
Session II 11:30 – 12:30 *Session Chair: Dr. Bo XIAO*	Multi-Agent Simulation for Analysis and Design *Dr. Hiromitsu HATTORI, KyotoU*
	Location-based Communications, Service and Privacy in Mobile Field *Dr. Hai LIU and Dr. Haibo HU, HKBU*
12:30 – 14:00	Lunch (at Shiu Pong Hall)
Session III 14:00 – 15:30 *Session Chair: Dr. Edmond HO*	Ubiquitous Information Supports for Healthcare Service *Dr. Tomohiro KURODA, KyotoU*
	Clinical Research Database on Plural Medical Facilities *Dr. Naoto KUME, KyotoU*
	On Patient Journey Shortening and Bottleneck Identification in Human Communication Network *Dr. William CHEUNG, HKBU*
15:30 – 15:45	Coffee Break
Session IV 15:45 – 16:45 *Session Chair: Dr. William CHEUNG*	Analyzing a Buyout Option in Internet Auction *Dr. Shigeo MATSUBARA, KyotoU*
	Social Opinion Mining for Supporting Users' Complex Decision Making *Dr. Li CHEN, HKBU*
16:45 – 17:00	Coffee Break

17:00 – 18:00	Sharing Session

The 15th HKBU-CSD Postgraduate Research Symposium (PG Day) Program (Cont.)

March 6th 2012, Tuesday		
Time	**Sessions**	
09:00-10:30	**Session I_A (Chair: Miss Bao Qing, T909)** ➢ **Peng Yun** Authenticated Subgraph Similarity Search in Outsourced Graph Databases ➢ **Andrew W. VARGO** Negative Incentives in Collaborative Q&A Communities ➢ **Yang Xiaofei** A systematic malaria transmission and diffusion model for comprehensive impact analysis among desynchronized regions	**Session II_A (Chair: Miss Yu Lu, RRS905)** ➢ **Tatsuya TOKUNAGA** Web Service Collaboration to Promote the Use of Clinical Data for HER ➢ **Tao Li** An Experimental Evaluation of Adaptive Operating Room Scheduling ➢ **Ari Hautasaari** Supporting Wikipedia Translators with Language Services
10:30-10:45	**Tea Break**	
10:45-12:15	**Session I_B (Chair: Miss Bao Qing, T909)** ➢ **Ma Jinhua** Supervised Spatio-Temporal Neighborhood Topology Learning for Action Recognition ➢ **Li Jiawei** Domain Adaptation for Person Re-identification ➢ **Lai Yongquan** Analyzing human motion by sparse methods with applications in computer animation	**Session II_B (Chair: Miss YU Lu, RRS905)** ➢ **Deng Jie** Intelligent Time-Varying Emotion-based Music Recommendation ➢ **Li Yuanxi** Comparison of Different Ontology-based Query Expansion Algorithms for Effective Image Retrieval ➢ **Chan Sheung Wai** Clinical Decision Support System for Acute Leukemia Classification in Coo-Development
12:15-15:00	**Noon Break**	
15:30-16:30	**Session III (Chair: Miss Yu Lu, T714)** ➢ **Liu Fei** Social Network Sites Migrants: A Comprehensive Model of Social Network Sites Switching Intention ➢ **Wong Yee man** Instigating, Impelling and Inhibiting Forces in the Perpetration of Cyber Bullying	**Session IV (Chair: Mr. CHAN Sheung Wai, T909)** Backup Time Slot

The 15th HKBU-CSD Postgraduate Research Symposium (PG Day) Program (Cont.)

March 7th 2012, Wednesday		
Time	**Sessions**	
09:30-11:00	**Session I_A (Chair: Miss Li Yuanxi, T909)**	**Session II_A (Chair: Mr. CHAN Sheung Wai, T714)**
	➢ **Peng Qinmu** Noisy Instances Removal ➢ **Wang Feng** Incorporating Reviewers' Feature Preferences for Recommending Products to New Users ➢ **Zhao Kaiyong** Survey of serial alignment	➢ **Li You** A GPU cloud computing based search engine platform for protein identification ➢ **Bao Qing** Dynamic Network Mining for Healthcare Process Improvement ➢ **Liu Kai** Detecting Multiple Stochastic Network Motifs in Network Data
11:00-11:15	**Tea Break**	
11:15-12:45	**Session I_B (Chair: Miss Li Yuanxi, T909)**	**Session II_B (Chair: Mr. CHAN Sheung Wai, T714)**
	➢ **Fan Zhe** Authentication for Querying Subgraph Isomorphism in Outsourced Graph Databases ➢ **Yu Lu** Multiple Radios rendezvous algorithm for CNRs: Parallel Sequence ➢ **Tang Chao** Adverse reaction estimation of antidepressants in online community	➢ **Gao Shen** PCMLogging: Reducing Transactional Logging Overhead with PCM ➢ **Chen Qian** Authenticating Location-based kNN Queries without Compromising Location Privacy ➢ **Mei Xinxin** A Survey of GPU-based Numerical Partial Differential Equation Solutions
12:15-15:30	**Noon Break**	
15:30-16:00	**Best Paper & Best Presentation Awards Announcement (RoomT909)**	
Closing		

15th PG Day Student Presentation List

30minute for both presentation and Q&A

			JL	YYT	Clement	NGJ	PCY	WC	YMC	XJ	LC	BC	CHU	BX	CHL	HB/ HL	YW	TAM
March 6th 2012, Tuesday																		
09:00am-10:30am T909																		
Mr. Peng Yun	彭雲	PhD	JL◊							XJ#		BC*						TAM◊
Andrew W. VARGO	**Kyoto U**	PhD																
Mr. Yang Xiaofei	楊曉飛	PhD	JL*		Clement◊			WC#	YMC◊									
09:00am-10:30am RRS905																		
Tatsuya TOKUNAGA	**Kyoto U**	PhD																
Ms. Tao Li	陶麗	PhD	JL*		Clement◊				YMC◊		LC#							
Ari Hautasaari	**Kyoto U**	PhD																
10:45am-12:15pm T909																		
Mr. Ma Jinhua	马锦华	PhD		YYT#			PCY*		YMC◊						CHL◊			
Mr. Li Jiawei	黎嘉偉	PhD					PCY*		YMC#						CHL◊			TAM◊
Mr. Lai Yongquan	賴勇銓	MPhil					PCY*		YMC#						CHL◊			
10:45am-12:15pm RRS905																		
Mr. Deng Jie	鄧杰	PhD			Clement*						LC#		CHU◊		CHL◊			
Ms. Li Yuanxi	李原曦	PhD	JL◊		Clement*			WC◊			LC#							
Mr. Chan Sheung Wai	陳尚瑋	PhD	JL#		Clement*													
15:30pm-16:30pm T714																		
Mr. Liu Fei	劉蕾	PhD			Clement◊							BC#		BX*	CHL◊			
Ms. Wong Yee Mam	王綺敏	MPhil			Clement◊							BC◊		BX*	CHL#			
15:30pm-16:30pm T909																		
Backup																		
Backup																		

15th PG Day Student Presentation List (Cont.)

			JL	YYT	Clement	NGJ	PCY	WC	YMC	XJ	LC	BC	CHU	BX	CHL	HB/ HL	YW	TAM
March 7th 2012, Wednesday																		
09:30am-11:00am T909																		
Mr. Peng Qinmu	彭勤牧	PhD							YMC*			BC◊	CHU◊		CHL#			
Mr. Wang Feng	王峰	PhD			Clement#						LC*	**BC◊**	**CHU◊**					
Mr. Zhao Kaiyong	赵开勇	PhD								XJ#		BC◊	CHU*			HL◊		
09:30am-11:00am T714																		
Mr. You Li	李由	PhD	JL#			JNG◊				XJ◊			CHU*					
Ms. Bao Qing	鲍青	PhD	JL#					WC*	**YMC◊**						**CHL◊**			
Mr. Kai Liu	劉凱	MPhil	JL#					WC*	YMC◊						CHL◊			
11:15am-12:45pm T909																		
Mr. Fan Zhe	樊哲	PhD								XJ#	LC◊	BC*	CHU◊					
Ms. Yu Lu	余璐	PhD				NGJ◊				XJ◊			CHU#			HL#	YW*	
Mr. Tang Chao	湯超	PhD				NJG◊		WC#						BX◊	CHL*			
11:15am-12:45pm T714																		
Mr. Shen Gao	高屾	MPhil				JNG◊				XJ*		BC#	CHU◊					
Mr. Chen Qian	陳乾	PhD								XJ*		BC#	CHU◊				YW◊	
Ms. Mei Xinxin	梅辛欣	PhD									LC◊		CHU*			HB◊		Tam#
14:00am-15:30pm T909&T714																		
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Supervisor *
Co-Supervisor #
Research Committee ◊

Not Available

5 March 2012, Monday

Keynote Session:

Title: Bringing Informatics to Design

Speaker: Prof. Toru ISHIDA (Professor, Kyoto University)

Biography

Toru Ishida has been a professor of Kyoto University since 1993.

His academic paths include visiting scientist/professor positions at Columbia University, Technische Universitaet Muenchen, Le Laboratoired' Informatique de Paris 6, Pierre et Marie Curie, University of Maryland,Shanghai Jiao Tong University, Tsinghua University and Hong Kong Baptist University. He is a fellow of IEEE, IPSJ, and IEICE since 2002, 2005, and 2008.

His research interest lies with autonomous agents and multiagent systems, and he has been working on this theme for more than twenty years. He is a co-founder of MACC/JAWS (Japanese), PRIMA (Asia/Pacific) and ICMAS/AAMAS (International), conferences on autonomous agents and multiagent systems. He served as a program co-chair of the second ICMAS, a chair of the first PRIMA, and a general co-chair of the first AAMAS.

He was also an editor-in-chief of Journal on Web Semantics (Elsevier) and an associate editor of IEEE PAMI, and Journal on Autonomous Agents and Multi-Agent Systems (Springer).

He has also started workshop/conference on Digital Cities and Intercultural Collaboration. In 2006, he began the Language Grid project. Department of Social Informatics, Graduate School of Informatics, Kyoto University takes on the role as the Language Grid Operator.

Title: Challenges in Computational Epidemiology

Speaker: Prof. Jiming LIU (Chair Professor, Hong Kong Baptist University)

Biography

Jiming Liu is the Chair Professor of Department of Computer Science at Hong Kong Baptist University (HKBU), Hong Kong. Prof. Liu received Bachelor of Science from East China Normal University, Shanghai, Master of Arts from Concordia University, and Master of Engineering and Ph.D. in Electrical Engineering from McGill University, Montreal. Before 1994, he had worked in the IT industry (e.g., Computer Research Institute of Montreal (CRIM), Virtual Prototypes Inc. (VPI), and Knowledge Engineering Technology Inc. (KENTEK) in Canada).

Prof. Liu's present research interests include multi-agent autonomy-oriented computing (AOC) paradigm, self-organizing/decentralized systems, Web intelligence (WI), and real-world complex systems/complex networks related problems (e.g., health and health systems, extreme events, and energy/sustainability management). His previous research focused on autonomous agents and multi-agent systems (AAMAS), robotics, and artificial intelligence (AI). He has contributed to the scientific literature in those areas. His work on AOC and nature-inspired computing (NIC) was highlighted in Science, October 2006, in Editors' Choice, and the work on adaptive user interface was referenced in Grand Challenges for Engineering in the 21st Century outlined by the U.S. National Academy of Engineering (NAE). He has given Keynote Talks at ICNC'08-FSKD'08, AWIC'07, RSEISP'07, RSKT 2006, AMT'06, and AWIC'05, and Invited Plenary Talks at KES'05, MMAS 2004, ISMIS'03, and IJCAI'03, among others. Prof. Liu received the President's Award for Outstanding Performance in Scholarly Work at HKBU in 2007. He was named 2011 IEEE Fellow for contributions to web intelligence and multi-agent autonomy-oriented computing.

Prof. Liu has served professional communities in various capacities, e.g., Editor-in-Chief of Web Intelligence and Agent Systems, Associate Editor of IEEE Transactions on Knowledge and Data Engineering (2005-2009), IEEE Transactions on Systems, Man, and Cybernetics, Part B (2009-), and Computational Intelligence (2007-) etc., Editorial Board Member of several other journals, General (Co-)Chair or Program (Co-)Chair of international conferences (IHI'12, ISMIS'12, ICDM'06, WI/IAT'05, EEE'04, IDEAL'03, WI/IAT'01, and IAT'99 etc.), Chair of IEEE Computer Society Technical Committee on Intelligent Informatics (TCII) (2010-), IEEE Computer Society Fellows Committee Member (2011), Co-Director of Web Intelligence Consortium (WIC), Member of Hong Kong Research Grants Council (RGC) Engineering Panel (2004-2010), and Member of Hong Kong Young Scientist Award Selection Panel (2002-).

Section I

Title: Gaming: a Tool for Eliciting Multilogue Communication

Speaker: Prof. Reiko HISHIYAMA (Professor, Waseda University)

Biography

Reiko Hishiyama is a professor in the Graduate School of Creative Science and Engineering at Waseda University in Tokyo, where she directs the Intelligent Information System laboratory. She received her Doctor of Informatics in 2005 from Kyoto University in Japan. She taught at Kyoto Women's University, before joining the faculty of Waseda University. Her current research interests include artificial intelligence, autonomous multi-agent systems, knowledge representation, autonomy oriented computing and related areas. The topic is viewed as an interdisciplinary field where computer science intersects with organization science, sociology, psychology, and other fields. In 2007, she has joined GCOE (Global Centers of Excellence) "field informatics" program in Graduate School of Informatics, Kyoto University.

Abstract

Society is facing complex issues related to sustainability on all levels, including local issues such as accidental pollution of a river or illegal dumping of waste, and national or international issues such as economic crisis or climate change.

In order to stimulate discussions about the mechanisms that drive these complex concerns and to focus on actions to be taken in the present to change the situation for the future, gaming or gaming simulation can be used as one of the effective techniques to overcome lack of communication. As a spontaneous solution to communication problems, gaming provides a hybrid communication system and presents an integrated or holistic perspective as "gestalt communication."

We have been designing and developing various versions of the original serious games to transmit the complex entirety of the issues to others. Our goal is to improve the efficiency of communication that bridges specialists and non-specialists by using information and communication technology. We conducted human- and agent-based participatory gaming simulations on the Internet and supported the practices of the social communities.

Title: Do Actions Speak Louder than Voices? The Impact of Observational Learning and Electronic Word of Mouth on Consumer Purchase Decisions and the Moderating Role of Consumer Expertise and Consumer Involvement

Speaker: Dr. Bo Sophia Xiao (Assistant Professor, Hong Kong Baptist University)

Biography

Dr. Bo Sophia Xiao is an assistant professor of Computing and Information Systems in the Department of Computer Science at Hong Kong Baptist University. She received her Ph.D. in Management Information Systems from the Sauder School of Business at the University of British Columbia. Her research interests include human-computer interaction; virtual communities and social networking; online trust, risk, and deception; and online consumer decision support. Her research has been published in top journals in the field of Information Systems, including Management Information Systems Quarterly and Information Systems Research.

Abstract

The social media revolution has created a dynamic shift in the digital marketing landscape. The voice of influence is moving from traditional marketers towards consumers through online social interactions. In this study, we focus on two types of online social interactions, namely, electronic word of mouth (eWOM) and observational learning (OL), and explore how they influence consumer purchase decisions. We also examine how receiver characteristics, consumer expertise and consumer involvement, moderate consumer purchase decision process. Analyzing panel data collected from a popular online beauty forum, we found that consumer purchase decisions are influenced by their online social interactions with others and that action-based OL information is more influential than opinion-based eWOM. Further, our results show that both consumer expertise and consumer involvement play an important moderating role, albeit in opposite direction: Whereas consumer expertise exerts a negative moderating effect, consumer involvement is found to have a positive moderating effect. The study makes important contributions to research and practice.

Section II

Title: Multi-Agent Simulation for Analysis and Design

Speaker: Dr. Hiromitsu HATTORI (Kyoto University)

Biography

Hiromitsu HATTORI is currently an assistant professor at Kyoto University, JAPAN. From 2004 to 2007, he was a reearch fellow of the Japan Society for the Promotion of Science (JSPS). During that period, he worked with Dr. Peter McBurney at University of Liverpool as an honorary research assistant, and with Dr. Mark Klein at Massachusetts Institute of Technology as a visiting researcher. He has worked on multiagent systems, with particular focus on negotiation, agent-based electronic commerce support. His current interests include multi-agent simulation, and human behavior modeling.

Abstract

Multiagent-based Simulations (MASim) are increasingly seen as the most attractive approach to reproducing and analyzing diverse social systems. The essential for realizing practical MASim, which is useful to analyze/understand real-life fields, is human behavior modeling. To construct behavior models, we need realistic human behavior data. However, in the real world, it is often difficult to conduct controlled experiments for obtaining data due to drastic changes in the environment. For example, in urban traffic, the traffic status is ever changing so that it is quite hard to obtain useful driving behavior data. In addition, there are cases in which it is impossible to conduct experiments, such as a huge disaster. Participatory multiagent simulations are useful in obtaining human behavior data in unknown environments. I talk about challenges to conduct simulations based on participatory technologies.

Title: Location-based Communications, Service and Privacy in Mobile Field

Speaker: Dr. Hai LIU and Dr. Haibo HU (Research Assistant Professors, Hong Kong Baptist University)

Biography

Hai Liu received the BSc and MSc degrees in applied mathematics from South China University of Technology, in 1999 and 2002, respectively. He received the PhD degree in computer science from City University of Hong Kong in 2006. He is currently a Research Assistant Professor with the Department of Computer Science, Hong Kong Baptist University. His research interests include wireless networking, mobile computing, and algorithm design and analysis. He is a member of the IEEE.

Biography

Haibo Hu is a Research Assistant Professor in the Department of Computer Science, Hong Kong Baptist University. Prior to this, he held several academic or research posts at HKUST and HKBU. He received his PhD degree in Computer Science from the Hong Kong University of Science and Technology in 2005. His research interests include mobile and wireless data management, location-based services, and privacy-aware computing. He has published over 30 research papers in international conferences, journals and book chapters. He is also the recipient of many awards, including ACM-HK Best PhD Paper Award and Microsoft Imagine Cup.

Abstract

Location information is widely adopted for facilitating communications and data management in mobile fields, including ad hoc networks, sensor and actuator networks, mobile and cellular networks. In the first part of this talk, we introduce the use of location information for communications in various wireless networks, and focus on a location-based movement control algorithm for building robust network topologies in robotic sensor networks. In the second part of this talk, we discuss the protection of users' location privacy in location-based services. Location cloaking has been proposed to blur users' accurate locations with cloaked regions. We show two location cloaking algorithms that achieve different objectives: one for reducing the bandwidth usage of subsequent location-based services and the other for minimizing the location information disclosure during cloaking.

Section III

Title: Ubiquitous Information Supports for Healthcare Service

Speaker: Dr. Tomohiro KURODA (Associate Professor, Kyoto University)

Biography

Tomohiro Kuroda is the vice CIO of Kyoto University Hospital and is an associate professor of Graduate School of Medicine and of Graduate School of Informatics at Kyoto University. He received B.S. in information science from Kyoto University in 1994, M.S. and Ph.D. in information science from Nara Institute of Science and Technology (NAIST) in 1996 and 1998. He was an assistant professor of Graduate School of Information Science at NAIST from 1998 to 2001, a lecturer of Department of Medical Informatics of Kyoto University Hospital from 2001 to 2006, and an associate professor of Graduate School of Engineering Science of Osaka University from 2007 to 2009. He was also with Department of Information Processing Science of University of Oulu, Finland in 2001 and 2006, where he holds the rank of visiting professor. His current research interests include Human Interface, Virtual/Augmented Reality, Wearable/Ubiquitous Computing, and Medical/Assistive informatics. He takes a role of a councilor of JAMI and JSMBE, the chief editor of transactions of JSMVR, the bureau chief of JASL, and others. He is a member of IEEE, VRSJ, HISJ, ISCIE, and others.

Abstract

A Hospital Information System (HIS) has turned a hospital into a gigantic computer with huge computational power, huge storage, and wired/wireless local area network. On the other hand, a modern medical device, such as an echograph, is a computer system with several functional units connected by an internal network named a bus. Therefore, we can embed such a medical device into the HIS by simply replacing the bus with the local area network. Introduction of sensor network infrastructure changes medical devices as peripherals of HIS, and enabling position tracking of the devices on the sensor network may lead to the emergence of disruptive innovation in the clinical field.

On the other hand, a HIS is a gigantic clinical repository. It holds any clinical information including three-dimensional medical images of patients and life-logs of clinical staffs. Therefore, introduction of add-on applications for various purposes, such as virtual-reality (VR) based surgery planning and visualization of clinical activities may open up new findings to advance clinical and activities.

This lecture provides ongoing project to introduce sensor network infrastructure and add-on applications to the HIS of Kyoto University Hospital.

Title: Clinical Research Database on Plural Medical Facilities

Speaker: Dr. Naoto KUME (Assistant Professor, Kyoto University)

Biography

Naoto Kume received the Ph.D degree in informatics from Kyoto University in September 2006. He was employed as a Research Fellow of the Japan Society for the Promotion of Science in 2006 to 2007. He is currently an assistant professor in the department of medical informatics at Kyoto University Hospital since 2007. Also, he was employed as a visiting researcher at ABB AB, corporate research Sweden in 2010.

His research interests lie in the field of virtual reality in medicine and medical informatics.

Abstract

Hospital information system (HIS) in Japan is developed in several ways depending on the hospitals. Though the HIS packages are recently well established, electronic medical records (EMR) are stored and processed according to the customized HIS system. After a few years of the HIS installation, it makes sense that the reuse of the medical records is demanded for clinical researches. If the clinical research uses EMR in the hospital, it is smooth to retrieve the test results and prescriptions from HIS. Although, when the clinical research takes aim at the rare diseases such as the mixed connective tissue disease (MCTD), it is very difficult to find the number of patients, only in the hospital, enough to make the research protocols. Therefore, now we are trying to merge the EMR data of several hospitals for the regional researches and the rare disease researches. We constructed a preliminary distributed database between four university hospitals in Japan. The data mapping of the test results in the facilities forces us to bear a burden. Eventually, we proceeded with five pilot studies to find the number of patients, who get a treatment for the same disease cluster, in the four hospitals. In the presentation, we discuss the problems with the distributed database system and the pilot studies.

Title: On Patient Journey Shortening and Bottleneck Identification in Human Communication Network

Speaker: Dr. William CHEUNG (Associate Professor, Hong Kong Baptist University)

Biography

William K. Cheung is currently an associate professor in the Department of Computer Science, Hong Kong Baptist University. He received the BSc and MPhil degrees in electronic engineering from the Chinese University of Hong Kong and the PhD degree in computer science in 1999 from the Hong Kong University of Science and Technology. He has served as the cochair and program committee members of a number of international conferences/workshops, as well as a guest editor of journals in areas including artificial intelligence, Web intelligence, data mining, Web services, and e-commerce technologies.

He has also been on the editorial board of the IEEE Intelligent Informatics Bulletin since 2002. His research interests include artificial intelligence and machine learning, as well as their applications to collaborative filtering, Web mining, distributed and privacy-preserving data mining, planning under uncertainty, and network data mining.

Abstract

Attaining higher operational efficiency in healthcare processes ensures better patient experience as well as better healthcare resource utilization. In particular, timely diagnosis and treatment, or in other words, a shorter treatment journey, is vital for cancer patients. Bad coordination among stakeholders (healthcare units) is often one of the major causes of process delays. The patient journey factor is hard to be taken into account, and thus resulting in long treatment journeys.

In this talk, we present our work on applying computational techniques to cancer patient journey shortening. The first part of the talk is about the use of a simulation-based approach for performing additional resources allocation with the patient journey factor used in the allocation strategy. Preliminary results obtained based on some real data will be presented. The second part of the talk is about our recent attempt in modeling the stakeholders' interactions as a dynamic network, and in turn casting the bottleneck root cause identification problem as a diffusion network inference problem and temporal motif detection problem.

Section IV

Title: Analyzing a Buyout Option in Internet Auction

Speaker: Dr. Shigeo MATSUBARA (Associate Professor, Kyoto University)

Biography

Shigeo Matsubara is an associate professor of Department of Social Informatics, Kyoto University. From 1992 to 2006, he was a research scientist of NTT Communication Science Laboratories, NTT. He received his Ph.D. degree in Informatics from Kyoto University. During 2002-2003, he was a visiting researcher at University of California, Berkeley. He was also an advisor of NICT Language Grid project from 2006 to 2007. His research focuses on multiagent systems and information economics. He has published in Artificial Intelligence Journal and other academic journals. He has served as a PC member for international conferences including AAMAS, IJCAI, AAAI and an industrial track co-chair of AAMAS2007.

Abstract

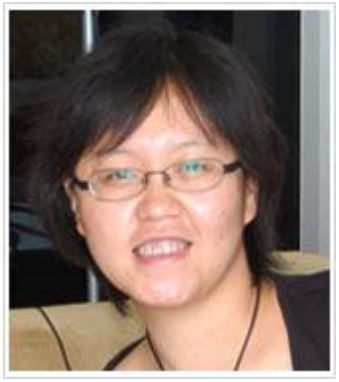
Which selling format is better among posted-price selling and ascending auctions? This has been discussed for a long time in economics. A data analysis of Internet auctions enables us to answer this question in a different way from the previous studies. Internet auction sites offer a buyout option, e.g., Yahoo! JAPAN auction provides a permanent buyout option to sellers. If a seller chooses to use a buyout option, a buyer can purchase the item at the buyout price even when the merchandise is also listed in the auction. By using a buyout option, a virtual posted-price selling can be realized in the auction markets it the starting price is set to the same value as the buyout price. An interesting point is that identical goods are sold using an auction and a posted-price selling at the same time. To investigate the interaction between the two selling formats, we have analyzed the real auction data provided by Yahoo! JAPAN auction. The results show that both posted-price sellers and auction sellers can increase their revenues by introducing buyout options, if the buyout price is set to an appropriate value. This helps to consider a billing structure suitable for Internet auction sites.

Title: Social Opinion Mining for Supporting Users' Complex Decision Making

Speaker: Dr. Li CHEN (Assistant Professor, Hong Kong Baptist University)

Abstract

Biography



Dr. Li Chen is Assistant Professor in the Department of Computer Science at Hong Kong Baptist University. She obtained her PhD degree in Human Computer Interaction at Swiss Federal Institute of Technology in Lausanne (EPFL), and Bachelor and Master Degrees in Computer Science at Peking University, China. Her research interests are mainly in the areas of human-computer interaction, user-centered design and development of intelligent Web technologies, recommender systems and e-commerce decision supports. Her co-authored papers have been published in high-quality journals (e.g. TOCHI, UMUAI, ECRJ, KBS) and top-rated conferences such as ACM EC, AAAI, IUI, UMAP, ACM RecSys. She is the vice chair of ACM HK Chapter. She has also been the program co-chair of ISMIS'12, demo and poster chair of UMAP'12, demo chair of IUI 2011, publicity chair of IUI'10, Asian liaison of ACM RecSys'10//11/12, and workshop co-organizer in IUI'10, CSCW'11 and RecSys'11.

6 March 2012, Tuesday

Section I_A:

Authenticated Subgraph Similarity Search in Outsourced Graph Databases

Peng Yun

Abstract: Subgraph similarity search in graph databases is to retrieve graphs whose structures are similar to a given query graph. It has a wide range of applications including bioinformatics, chem-informatics, social networks, etc. Due to the volume of graph data, it is increasingly common that the owner of a graph database outsources the data to third-party query service providers. Unfortunately, query service providers may be untrusted or compromised to attacks. As a result, users (i.e., query clients) may receive tampered results. An authentication framework of similarity search for outsourced graph databases is still lacking. In this paper, we propose a novel index called GMTree (derived from MTree) to support efficient authentication of subgraph similarity search. Our analytical model shows that the VO size is propotional to the node size of GMTree and the optimum VO size is log2 n when node size is 2. We propose a sampling-based construction algorithm for GMTree. Regarding verification, we propose three optimization algorithms to minimize VO size and the computation at the client side. Our comprehensive experimental evaluation confirms the analytical model and justifies the effectiveness and efficiency of our proposed techniques.

Negative Incentives in Collaborative Q&A Communities

Andrew W. VARGO

Abstract: The goal of this research is to explore the effect of negative incentives on solution maintenance and community participation in Q&A systems from a game theoretic point of view. Q&A systems which aim to provide problem solutions and build an information corpus often have to find innovative ways of letting the community filter good and bad information. Users, in the target system of this research, can either vote questions and answers as being good or bad. However, this system leans towards wanting more information rather than less, and therefore imposes a reputation cost on voting negatively. This research seeks to identify who does and does not vote down, and the potential game models for each kind of user.

A systematic malaria transmission and diffusion model for comprehensive impact analysis among desynchronized regions

Yang Xiaofei

Abstract: As one of the severest vector-borne infection diseases, the progress of malaria's complicated transmission and diffusion is affected by several factors, such as biological, environmental, and socioeconomic factors. Existing studies mainly focus on investigate single factor's impact or two factors' relationship that may affect malaria transmission within single population or region. In this paper, to provide a fundamental framework for inferring underlying malaria transmission and diffusion pattern in our next step work, based on modified Ross-Macdonald model, we propose a model which furthermore assembles vector population dynamic model (VPDM) and cellular automata model. This assembled model allows us: (a) to investigate the comprehensive impact of key factors that affect malaria transmission and diffusion; (b) to study malaria transmission and diffusion dynamics among distributed and desynchronized regions in both temporal and spatial scale.

Section I_B:

Supervised Spatio-Temporal Neighborhood Topology Learning for Action Recognition

Ma Jinhua

Abstract: Supervised manifold learning has been successfully applied to human action recognition, in which class label information could improve recognition performance. However, the learned manifold may not be able to well preserve both the local structure and temporal pose correspondence of sequences from the same action. To overcome this problem, this paper proposes a new supervised manifold learning algorithm namely supervised spatio-temporal neighborhood topology learning (SSTNTL) for action recognition. By analyzing the topological characteristics in the context of action recognition, we propose to construct the neighborhood topology using both supervised spatial and temporal pose correspondence information. Employing the locality preserving property in LPP, SSTNTL solves the generalized eigenvalue problem to obtain the best projections that not only separating data points from different classes, but also preserving local structures and temporal pose correspondence of sequences from the same class. Experimental results demonstrate that SSTNTL outperforms the manifold embedding methods with other topologies as well as local discriminant information. Moreover, compared with state-of-the-art action recognition algorithms, SSTNTL gives the best performance for both human and gesture action recognition.

Domain Adaptation for Person Re-identification

Li Jiawei

Abstract: Matching people across non-overlapping cameras, known as re-identification, is an important problem in multiple camera tracking. Due to the lack of strong spatial and temporal constraints and variance of apparent features, re-identification is a challenging problem and receiving recent attention. In this paper, we introduce existing approach on re-identification, and point out the difficulty in re-identification. Second, we translate re-identification into a domain adaptation problem, where we identify Probabilistic Relative Distance Comparison (PRDC) based features in two different cameras build up source domain and target domain respectively. And then, intermediate domains are built to connect source domain and target domain together, and PRDC model is applied on all these domain as a multi-target learning problem.

Analyzing human motion by sparse methods with applications in computer animation

Lai Yongquan

Abstract: Sparse methods are the class of approaches that exploit the intrinsic sparseness property of data to improve the performance of specific tasks in machine learning, computer vision, signal processing and recently in computer graphics. These methods usually involve the ℓ_1-norm and nuclear norm minimization, corresponding to the sparse coding model and low-rank models respectively. In our research, we introduce sparse methods to human motion data analysis. Specifically, we study the low-rank property of human motion and apply it to mocap data de-nosing; we study the sparse representation of poses and apply it to character posing in computer animation; We also study the related optimization problems in a unified framework.

Section II_A:

Web Service Collaboration to Promote the Use of Clinical Data on HER

Tatsuya TOKUNAGA

Abstract: Nowadays, Hospital Information System accelerates the electronic preservation of the medical records. Electronic Medical Record (EMR) provides a basis of the dataset of Electronic Health Record (EHR). EHR is expected to share medical information between multiple facilities and is also expected to establish the access to the patient's records for the patient. Needless to say, EHR should protect stored medical records in safe complying with the data handling policy of the each facility. After that, EHR is demanded to provide EHR applications which are optimized to the users such as doctors and patients. For more pervasiveness of EHR, EHR applications should be quickly provided by low costs. This research aims to provide an application framework based on the web service architecture which is familiar with network technologies. The proposed framework provides an environment to access EHR with the other web services on web to enrich medical information by connecting resources on web. Moreover, EHR data source should be connected with web service architecture so that the application developer can mush up any web services seamlessly internally and externally. Finally, a part of the real EHR system is implemented by the proposed application framework. This presentation shows the design of the application framework.

An Experimental Evaluation of Adaptive Operating Room Scheduling

Tao Li

Abstract: Time block allocation plays an essential role in operating room (OR) management. Due to unpredictable patient arrivals, excessive time blocks for urgent surgeries may result in unused time blocks, whereas insufficient time blocks for urgent surgeries may lead to cancellations of non-urgent surgeries. Current ways for allocating time blocks in Ontario are primarily based on the methods used in prior years. Thus, ORs with relatively static allocation strategies may not utilize resources effectively to fulfill patients' timely needs. This paper proposes an adaptive OR time block allocation strategy to achieve a trade-off between the number of bumped non-urgent surgeries and unused urgent time blocks. By using a queuing model built on the perioperative practice in Hamilton Health Sciences Centre (HHSC) in Ontario, we conduct a discrete-event simulation study. The simulation results suggest that our adaptive strategy can help ORs maintain a stable performance in the face of dynamically-changing/unpredictable patient arrivals.

Supporting Wikipedia Translators with Language Services

Ari Hautasaari

Abstract: Wikipedia is the largest user edited online encyclopedia available. However, there are large discrepancies between the different language versions in terms of the number of articles as well as number of active users. Translation activities in Wikipedia are aimed to make information equally available in all languages. Language services, such as multilingual dictionaries and machine translators, can aid contributors in the mechanical translation of articles, as well as help connect domain experts and translators with no common language through the Wikipedia discussion pages. This research focuses on the collaborative translation practices in Wikipedia, and how to support translators with language services.

Section II_B:

Intelligent Time-Varying Emotion-based Music Recommendation

Deng Jie

Abstract: Time-varying emotion-based music recommendation is to recommend music based on the listener's emotion status in real-time. In this paper, a hierarchical computational emotion model is first proposed, which consists of two layers: an external layer that represents preliminary and superficial emotions and an internal layer that represents psychic and resonant emotions. Using these two layers, a Resonance-Arousal-Valence (RAV) emotion model has been constructed. According to the research on psychology and musicology, we utilize emotion intensity decay and saturate to represent the change of emotion over time by utilizing inverse exponential and logarithmic functions. Through the representation of music emotion by three dimensional resonance-arousal-valence spaces, each piece of music belongs to one emotion state. In order to obtain the listener's current emotion state through his or her listening history, we apply Conditional Random Field (CRF) approach to estimate his or her emotion state which has the largest influence probability. After predicting the listener's emotion in real-time, emotion-based music recommendation can be constructed by ranking emotional similarity. In order to improve the recommendation performance and flexibility, we adopt reinforcement learning to interact with listeners to obtain emotional satisfaction scores. The preliminary experiment results show that our proposed music emotion model and applied CRF approach are able to obtain good prediction accuracy on listener's emotion state. Reinforcement learning provides a good interaction with the listeners to dynamically and intelligently provide music recommendation based on time-varying emotions.

Comparison of Different Ontology-based Query Expansion Algorithms for Effective Image Retrieval

Li Yuanxi

Abstract: We study several semantic concept-based query expansion and re-ranking scheme and compare different ontology-based expansion methods in image search and retrieval. In particular, we exploit the two concept similarities of different concept expansion ontology-WordNet Similarity, Wikipedia Similarity. Furthermore, we compare the keywords semantic distance with the precision of image search results with query expansion according to different concept expansion algorithms. We also compare the image retrieval precision of searching with the expanded query and original plain query. Preliminary experiments have been able to demonstrate that the two proposed retrieval mechanism has the potential to outperform unaided approaches.

Clinical Decision Support System for Acute Leukemia Classification in Coo-Development

Chan Sheung Wai

Abstract: This paper provides a review of Clinical Decision Support System (CDSS) with a focus on set up a “Bridge” between system developer and clinical staff. Acute Leukemia will be brief decision tree example be mentioned for Acute Leukemia Classification. For the purpose of improve in medical domain with I.T. technique. Clinical staff and system developer build up CDSS in Coo-Development plan. Also Explanation system in CDSS provides feedback “Channel”.

Section III:

Social Network Sites Migrants: A Comprehensive Model of Social Network Sites Switching Intention

Liu Fei

Abstract: Consumer switching Intention, which is the strong predictor of Consumer switching Behavior, has always been an important criterion in marketing literature. Recently, this criterion is adapted to IS discipline to explain customers' switching Intentions under the context of Internet services, including blog, online gaming and Social Network Sites (SNSs). For IS researchers, the importance of this recently emerged concept is increasing because of the rapid growth of micro-bloggers and SNSs users and constantly improving variety in the portfolio of options for cyber service providers. This article goes through a comprehensive literature review for consumer switching behavior researches under multiple disciplines in order to provide an unified theory framework adapted from push-pull-mooring model of migration literature to thoroughly investigate Social Network Sites (SNSs) users' intention to switch between SNSs. I believe this framework will provide insights for both IS researchers and SNSs practitioners.

Instigating, Impelling and Inhibiting Forces in the Perpetration of Cyber Bullying

Wong Yee man

Abstract: Internet not only facilitates communication, they also provide a fertile ground for various types of undesirable behavior. Cyber-bullying is one form of defined as harassment through the use of electronic media (such as computers, cell phones, and other electronic devices). Rising incidents of and tragedies in cyber space have alerted the related parties about the severity of the online harassment. This study attempts to examine the driving forces of bullying in cyber space. Drawing from I3 Theory, we identify three predictive forces, instigation, impellance and inhibition, leading the individual's behaviors. Both instigating and impelling forces increase individual's likelihood of online perpetration, whereas inhibition may lower their tendencies toward the cyber-bullying behaviors. This study extends the application of I3 Theory. Findings confirm the significant effect of three forces, in both cyber-bullying and aggressive behaviors, and also provide valuable insights to educators, government officials, and parents to focus on these forces when tackling the cyber perpetration.

Section IV:

Backup Session

7 March 2012, Wednesday

Section I_A:

Noisy Instances Removal

Peng Qinmu

Abstract: Noisy instances often degrade the classification and cluster accuracy. In this paper, we present a noisy instance removal approach base on local kernel regression. It evaluates the reconstruction error of instances by their neighbors to identify the possible noisy instances. Experiments is performed on on several simulated and real life data sets, its results show the efficacy of the proposed approach in comparison with the existing method.

Incorporating Reviewers' Feature Preferences for Recommending Products to New Users

Wang Feng

Abstract: In practice, most products in e-commerce are with high cost (e.g., digital cameras, mobile phone), and thus, the traditional recommender techniques (such as user-base CF and content-based methods) are not applicable, because they largely assume that the users have prior experiences with the items. The "new user" is hence a typical phenomenon and challenging issue that recommender systems face in this environment. In this paper, we have studied different approaches by utilizing reviewers' feature preferences to generate recommendations to new users, Particularly, we have developed a novel method based on the Finite Mixture Models (FMM), to identify and cluster reviewer's feature preference after they are obtained through the opinion mining of product reviews. The experimental results reveal that the FMM significantly outperforms the other approaches (including K-Means based clustering) in terms of recommendation accuracy.

Survey of serial alignment

Zhao Kaiyong

Abstract: With the continuous upgrading of gene acquisition equipment, the data collection of new gene acquisition instrument's ability is greatly improve. From the short sequence of the second generation of gene acquisition instrument, to the latest third-generation long sequence acquisition instrument, increasing of genetic data, it makes genetic analysis equipment increased pressure. For long sequence alignment need more efficient and more reliable. Short sequence alignment algorithms are more based on BWT, suffix array or hash. For long sequence alignment, in my view, more of them are based on Simth Waterman.BWA and SOAP3 are using dynamic planning algorithm to solve this problem. Even those, those speed can't catch up with the data collection instrument. In this paper, author will give a overview of the algorithms in sequence alignment. Summary of previous experience and analyze the advantages to find the disadvantages of those existing algorithms to make basic research for long sequence alignment. Long sequence alignment is a string-matching algorithm, in this paper, author would like to use the information theories, processing the string message as sound signal or image. With this line of thought, you can extract the eigenvalues of the data, reducing the alignment dimension. There are two advantages. One is more than one mismatch can be efficient and fault-tolerant. The second is for the data reference tree, when new attributes are been added, the structure of the reference don't need rebuild but only need to insert or deletion in the reference structure.

Section I_B:

Authentication for Querying Subgraph Isomorphism in Outsourced Graph Databases

Fan Zhe

Abstract: This paper proposes an authentication framework for subgraph isomorphism queries. The intrinsic difficulty of authenticating subgraph isomorphism query is that the query answer does not fall into a range in general. Worst still, a host of practical algorithms return a candidate set (superset of answer) for verification. Both of these may result in large verification objects (VO's). In response to this, we propose a novel index for subgraph isomorphism called Intersection-aware Feature subgraph Tree (IFTree). IFTree is derived from a feature-based index. A query graph can be represented by different features and their potential answers are intersected to construct the candidate set. IFTree organizes the graphs such that the intersection of graphs can be compactly represented in VO's. The graphs in VO's are compressed and verified at the client side.

Multiple Radios rendezvous algorithm for CNRs: Parallel Sequence

Yu Lu

Abstract: Cognitive Radio Networks has been considered as an effective way to exploit the existing wireless spectrum opportunistically. All prior rendezvous algorithms implicitly assume that each node is equipped with one radio. According to some studies, we observed that the cost of a radio is low compared with the cost of wireless device. We proposed to equip each node with two or more radios for rendezvous so that we can realize favorable tradeoff between cost and rendezvous performance. In this paper, we evaluated the performance of the existing rendezvous algorithms when each node is equipped with multiple radios and each radio perform the existing algorithm independently. In terms of expected TTR (E(TTR)) and maximum TTR (MTTR), we showed that the rendezvous performance can be significantly improved. Then we proposed a Multiple Radios Parallel Sequence (MRPS) algorithm that specifically exploit the multiple radios for efficient rendezvous. Users stay in a specific channel in the only one stay-radio while all other radios will jump on the available channels and share one original sequence which generated when each user has a single radio. In this algorithm, we could guarantee a rendezvous between the stay-radio of one user and jump-radio of another user. We derived the upper-bound of MTTR and E(TTR) for both symmetric model and asymmetric model. No matter in theoretical analysis or simulation results, the MRPS algorithm has a better performance. Moreover, MRPS can apply to a general rendezvous algorithm or be commonly used to the case when all users has only one radio.

Adverse reaction estimation of antidepressants in online community

Tang Chao

Abstract: Although the adverse reactions of antidepressants are studied in clinical trials, some measurements might not reflex the actual incidence after entering market. Drug reviews on health 2.0 website would provide an unofficial resource of feedbacks in user perspective. This paper mainly studied the antidepressants reviews in webmd.com from 2007-9-18 to 2011-12-21. It showed that the adverse reaction reporting in web is statistically different from clinical trial and many are under reported in web. Adverse reaction report ratios are used to estimated the adverse reaction incidence, and recommendation are given in terms of such estimation, which are fluoxetine (5.74%), escitalopram (7.34%), sertraline (8.00%), citalopram (8.25%), venlafaxine (9.89%), and duloxetine (10.35%). Such estimation incidence showed high correlation with drug acceptability (dropout rate). The different response on weight change issue between female and male and the significance of suicide attempt in teenage are also discovered. Such analysis method could be generalized for other subjects, e.g. herbal and could be more accurate by increasing number of both drugs and reviews.

Section II_A:

A GPU cloud computing based search engine platform for protein identification

Li You

Abstract: Nowadays, mass spectrum based protein identification has become one of the key topic in proteomics, which plays a significant role in biology knowledge discovery, disease research, based on identification search engine. In the past decade, we all rely on two commercial software Mascot and SEQUEST to analyze the mass spectrum (MS). The most serious problem under current software is only 10% MS have results while the others are wasted. Besides, when dealing with post translation modification (PTM), they are suffering a time and space challenge and cannot identify new PTM. Spectral library search is a promising method to deal with PTM identification. Consequently, we target at designing and implementing a fast and accurate protein identification search engine based on both protein and spectral database, adopting CPU$GPU cluster as the high performance platform and cloud service as the software architecture. We will also open our platform to support other algorithms based on a standard implementation

Dynamic Network Mining for Healthcare Process Improvement

Bao Qing

Abstract: Dynamic network mining gains a lot of attention recently due to its applicability to a number of real-world problems where analysis of behavioral properties in networks is involved. In this paper, we first present a literature review on dynamic networks, the use of model-based approach for analyzing dynamic networks, and cascade modeling and its applicability to healthcare process improvement. Then, we put forward a research plan for studying a particular approach for cascade modeling in the healthcare process.

Detecting Multiple Stochastic Network Motifs in Network Data

Liu Kai

Abstract: Network motif detection methods are known to be important for studying the structural properties embedded in network data. Extending them to stochastic ones help capture the interaction uncertainties in stochastic networks. In this paper, we propose a finite mixture model to detect multiple stochastic motifs in network data with the conjecture that interactions to be modeled in the motifs are of stochastic nature. Component-wise Expectation Maximization algorithm is employed so that both the optimal number of motifs and the parameters of their corresponding probabilistic models can be estimated. For evaluating the effectiveness of the algorithm, we applied the stochastic motif detection algorithm to both synthetic and benchmark datasets. Also, we discuss how the obtained stochastic motifs could help the domain experts to gain better insights on the over-represented patterns in the network data.

Section II_B:

PCMLogging: Reducing Transactional Logging Overhead with PCM

Gao Shen

Abstract: Phase Changing Memory (PCM), as one of the most promising next-generation memory technologies, offers various attractive properties such as non-volatility, bit-alterability, and low idle energy consumption. As it is merging into the memory hierarchy, we need to understand and exploit the impact of PCM for database management system(DBMS). In this paper, we specifically investigate the role of PCM for the transaction execution process and propose a novel logging scheme PCMLoggin that exploits PCM devices for both data buffering and transactional logging. Different from the traditional approach where buffered updates and transactional logs are completely separated, they are integrated in this new scheme. Our experiments show an up to 40\% improvement in disk I/O performance in comparison with a basic buffering and logging scheme.

Authenticating Location-based kNN Queries without Compromising Location Privacy

Chen Qian

Abstract: The popularity of mobile social networking services (mSNSs) is propelling more and more businesses, especially those in retailing and marketing, into mobile and location-based forms. To address the trustworthy issue, the service providers are expected to deliver their location-based services in an authenticatable manner, so that the correctness of the service results can be verified by the client. However, existing works on query authentication cannot preserve the privacy of the data being queried, which are sensitive user locations when it comes to location-based services and mSNSs. In this paper, we address this challenging problem by proposing a comprehensive solution that preserves unconditional location privacy when authenticating kNN queries. Two authentication schemes, together with several optimization techniques, are developed. Cost models, security analysis, and experimental results consistently show the effectiveness, reliability and robustness of the proposed schemes under various system settings and query workloads.

A Survey of GPU-based Numerical Partial Differential Equation Solutions

Mei Xinxin

Abstract: Partial differential equations (PDE) solutions arise in a wide variety of science and engineering problems while most practical problems use numerical techniques. With the prevalence of general-purpose computation on graphic processors, numerical PDE solver performance improves significantly. In this paper, we describe, summarize and analyze two main numerical methods to solve PDEs, finite difference method and finite element method as well as their GPU based latest research and applications.