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Message from the Chairman of the International Computer Congress 1999

Introduction

The International Computer Congress 1999 to be organized in Hong Kong from December 13-17, 1999, features four international conferences, namely the International Computer Science Conference (ICSC'99), the Sixth International Conference on Real-Time Computing Systems and Applications (RTCSA'99), the First International Conference on Mobile Data Access (MDA'99), and 1999 Pacific Rim International Symposium on Dependable Computing (PRDC 1999).

The International Computer Science Conference (ICSC) is the flagship conference of the IEEE Hong Kong Section Computer Chapter. ICSC'99 is the fifth in the series of conferences dedicated to the forefront of computer science. This is the 10th year of ICSC and every ICSC had a different theme reflecting the general interest of computer science at the time. The ICSC'97 was a joint conference with APSEC'97 featuring advanced topics on Software Engineering. For 1999, the theme is Internet Applications to celebrate the tremendous growth of the Internet.

RTCSA'99 will be the sixth in its series and will be held in Hong Kong for the first time. RTCSA has previously been held in Japan, Korea, and Taiwan. RTCSA'99 will bring together researchers and developers from academia and industry for advancing the technology of real-time computing systems and applications. The conference has the following goals:(1) to investigate advances in real-time systems and applications; (2) to promote interaction among real-time systems and applications; (3) to evaluate the maturity and directions of real-time system technology.

The First International Conference on Mobile Data Access is the successor of the workshop on Mobile Data Access held in Singapore in November 1998. Recognizing the success of the workshop and the importance of the area, the organizing team decided to transform it into an international conference to address the support of data access over hybrid wireless and wired networks. The scope of the conference includes but is not limited to information broadcast and filtering, data and location management, mobile networks, quality of service, and applications.

The Pacific Rim International Symposium on Dependable Computing (formerly the Pacific Rim International Symposium on Fault-Tolerant Systems) is a biennial symposium. This will be the sixth in the series of biennial symposia organized since 1989. The growing influence of computers and information technology on our lives calls into question several issues related to the dependability, safety, and security of computing systems and software. The objective of this symposium is to disseminate state-of-the-art research in dependable computing, with particular emphasis on systems and software.

The Computer Science Congress is structured to have ICSC'99 and RTCSA'99 running in parallel from December 13-15, 1999. MDA'99 will start on December 15 and run in parallel with PRDC 1999 from December 16-17, 1999.

Objectives and benefits of holding the four conferences in Hong Kong

The Hong Kong economy, and economies in the Asia-Pacific region in general are going through a painful recession and restructuring at the moment due to the widespread economic crisis. Leaders in the region are grappling with ways and means of coming to terms with the problems and leading these economies towards growth and success in the next millenium. The Chief Executive's Commission on Innovation and Technology, in its first report, has attempted to address these issues and has made recommendations for the future direction of Hong Kong. In the words of Tien Chang-Lin, the chairman of the commission (paraphrased from The Hong Kong Industrialist, December 1998):

> The commission envisages Hong Kong to be an innovation-led, technology-intensive economy in the 21st century, serving the region not only as a business and financial centre, but also as a leading city in the world for the development and use of information technology.

The Secretary for Information Technology and Broadcasting, The Hon. K. C. Kwong, outlines the government's IT strategy for Hong Kong (paraphrased from The Hong Kong Industrialist, December 1998) as:

> A healthy local IT industry is essential to the development of content and innovative applications in Hong Kong.

Rapid advances in information technology are evident in how it impacts our daily lives, personified by the explosive growth of the Internet. The widespread penetration of IT into our daily lives, be it in banking, financial services, real estate, transportation, manufacturing, government, and high technology areas, is unfathomable. Hong Kong, being a technology-savvy city, has been at the forefront of adopting information technology in all aspects of its economy and daily life. While the introduction of IT brings with it immense benefits, special attention should be devoted to addressing the problems of dependability arising from this growing dependance on IT.

This brings us to the focus and significance of holding the International Computer Congress 1999 in Hong Kong. ICSC'99, with its primary focus on Internet applications, focuses on an important and growth-oriented field. RTSCA'99, with its focus on real-time systems and their applications is very important for the local manufacturing and services industry. MDA'99 with its emphasis on the support of data access over hybrid wireless and wired networks, and PRDC 1999, with its focus on dependability issues, both address an important area of

potential problems due to the widespread application of computer and information technology in our daily lives. The four conferences will enable researchers and industry participants from Hong Kong, China, and the rest of the world, to share their common knowledge, expertise, and ideas about various aspects of information technology.

Conference Plans

Each of the conferences featured in the International Computer Congress 1999 have formed very strong program committees whose members are experienced and internationally recognized researchers in their fields of expertise. We are pleased that we have attracted many high quality research paper submissions which will benefit all participants including many professionals and academics from Hong Kong, China, and the rest of the world. These papers will provide state-of-the-art information on engineering and information technology for developing possible applications in the local industry.

In addition to accepting high quality research papers, the congress has also accepted papers reflecting on industrial experience. There are special sessions for presenting such industry-oriented papers. This will provide a forum for the practitioners in industry to discuss their practical experience in applying engineering methodology and tools. This will also allow other researchers to learn from the first hand experience of the practitioners and to fuel their future research.

The conferences also feature keynote speeches by eminent and internationally renowned researchers in the respective fields. These speakers will provide their own vision of the future for their fields of expertise. This will greatly benefit both academics and industrial participants because the speeches will highlight new directions for future research and development.

Acknowledgements

We would like to thank all those who submitted papers to the conferences of this congress. We would also like to thank all program committee members who have devoted their valuable time to reviewing and selecting the papers, and all organization committee members of the ICC and the four conferences who have devoted their valuable time and effort to making this conference a success. Furthermore, we would like to thank the advisors for their firm support and valuable advice.

November 1999 Karl R.P.H. Leung

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Message from the ICSC General Chairman

The ICSC is the conference organized by the IEEE HK Section, Computer Chapter. This year's conference is not only the 5th conference, but also the last one before the Millenium. It therefore gives me great pleasure to welcome you all to Hong Kong, one of the 50 cities you have to visit at least once in your life. The theme - internet application - is a timely one, as the entire world becomes more closely linked by the Internet. I hope you will enjoy your stay in Hong Kong and look forward to seeing you at future conferences. Finally, I would like to thank the members of the organizing committee for their hard work, and Mr Ricky Tang for his help in compiling these proceedings.

November 1999 Kwok-Ping Chan

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Message from the ICSC Program Committee Chairman

ICSC'99 is the fifth of a series of conferences organized by the IEEE Hong Kong Section, Computer Chapter. Each ICSC conference has a theme. This time, the theme "Internet Application" has been selected.

The tremendous growth of the Internet in the past decade has begun to impact us in almost every aspect we can imagine. We depend more and more on the Internet to communicate with each other (and even feel more comfortable about it than, say, telephones). Our education and economy are dependent more and more on the Internet – witness the boom of Internet-based retail and auction companies and the increasing use of Web-based distance learning. With the penetration of the Internet in Asia, ICSC'99 is a timely event for researchers and industrialists to get together and to share with each other problems, solutions, and new ideas.

What is special about ICSC'99 is that it is being held as part of the Federated 1999 International Computer Congress (ICC'99), a week-long event consisting of four conferences: the Fifth International Computer Science Conference (ICSC'99), the Sixth International Conference on Real-Time Computing Systems and Applications (RTCSA'99), the Pacific Rim International Symposium on Dependable Computing (PRDC'99), and the First International Conference on Mobile Data Access (MDA'99). While each conference maintains its own focus, I hope delegates to ICSC'99 will participate in and take advantage of the other conferences, and vice versa.

For ICSC'99, we received 80 papers and accepted 30 regular papers and 30 short papers. We aimed at balancing the technical quality and diversity, so that conference participants can interact with each other in a wide range of areas. As can be seen from the technical program, the papers cover a large number of topics relating to the Internet. The fact that the authors of these papers come from many different countries is perhaps equally important. I hope delegates to the conference will interact not only in the technical sessions but in coffee breaks, during lunches (arranged by the conference), and at the conference banquet as well.

This year, several paper sessions have been reserved for the AEARU Second Workshop of Computer Science. AEARU is an association of 17 major research universities in East Asia. Delegates from the member universities will join ICSC'99 and discuss their research and curriculum development activities.

Last but not least, I would like to take this opportunity to acknowledge the excellent work of the program committee and external reviewers in putting the technical program together.

October 1999 Dik Lun Lee

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Table of Contents

Information Filtering

A Study of Belief Revision in the Context of Adaptive Information Filtering 1
Raymond Lau, Arthur H.M. ter Hofstede, Peter D. Bruza

Evaluating Performance Indicators for Adaptive Information Filtering 11
Carsten Lanquillon

Agent / Active Networks I

Optimizing Data-Mining Processes: A CBR Based Experience Factory for Data Mining 21
Kai Bartlmae

Data Mining

Analysing Warranty Claims of Automobiles: An Application Description Following the CRISP-DM Data Mining Process 31
Jochen Hipp, Guido Lindner

An Adaptive Method of Numerical Attribute Merging for Quantitative Association Rule Mining 41
Jiuyong Li, Hong Shen, Rodney Topor

Discovering Tendency Association between Objects with Relaxed Periodicity and Seismology Application 51
Tang Changjie, Rynson W. H. Lau, Yang Lu, Yin Huabei, Yu Zhonghua, Xiang Limin, Qing Li, Tianqing Zhang

Web Databases

Algebraic Operations on Bags in a Web Warehouse..... 63
S. S. Bhowmick, S. K. Madria, W.-K. Ng, E. P. Lim

A Distributed Search System Based on Markov Decision Processes 73
Yipeng Shen, Dik Lun Lee, Lian Wen Zhang

A Framework for Warehousing the Web Contents 83
Yan Zhu

User Interface

Dynamic Generation and Browsing of Virtual WWW Space Based on User Profiles 93
Norihide Shinagawa, Hiroyuki Kitagawa

SemiLog: A Logic-Based Query Language for Hierarchical Data in Web Documents 109
Seung-Jin Lim, Yiu-Kai Ng

Reduction of Object Overlap in Three-Dimensional Browsing Space for Internet Data 121
Toshihiro Kakimoto, Yahiko Kambayashi

Multimedia

ScoopCast: Dynamic Video Production and Delivery from Indexed Live Video Stream 133
Kazutoshi Sumiya, Tomoaki Kawaguchi, Akihiro Doi, Katsumi Tanaka, Kuniaki Uehara

About Tours in the OTHY Hypermedia Design 146
Franck Barbeau, José Martinez

Aspect-Oriented Design (AOD) Technique for Developing Distributed Object-Oriented Systems over the Internet 156
Joon-Sang Lee, Sang-Yoon Min, Doo-Hwan Bae

Modeling

Modeling Enterprise Objects in a Virtual Enterprise Integrating System: ViaScope 166
Xiaochun Yang, Guoren Wang, Ge Yu, Dik Lun Lee

Object-Oriented Design of an E-Commerce System for Retailing Business . 176
Simon Fong, Chan Se-Leng

Extended Awareness Support for Cooperative Work in Non-WYSIWIS Condition 186
Yusuke Yokota, Hiroyuki Tarumi, Yahiko Kambayashi

Information Retrieval

Query Length, Number of Classes and Routes through Clusters Experiments with a Clustering Method for Information Retrieval 196
Patrice Bellot, Marc El-Bèze

Self-Organizing Neural Networks for Data Projection 206
Mu-Chun Su, Hisao-Te Chang

ROC Performance Evaluation of Web-Based Bibliographic Navigator Using Extended Association Rules 216
Minoru Kawahara, Hiroyuki Kawano

Workflow

Specifying and Reasoning about Workflows with Path Constraints 226
Wenfei Fan, Scott Weinstein

Prototyping Web-Based SmartFlow Multi-application System Using Smart Card Technology 236
Patrick C. K. Hung, Kamalakar Karlapalem

Temporally Constrained Workflows 246
Eleana Kafeza, Kamalakar Karlapalem

Applications

A Simple MDCT-Based Speech Coder for Internet Applications 256
Kwong Cheuk Fai, Wing Man Pang, Hon Cheung Wu, Keang-Po Ho

Supporting Real-Time Faxing over the Internet 264
K. Jin, S.C. Hui, C.K. Yeo

Developing Quality of Service Capabilities for Distributed Imagery Dissemination Service 274
Andrew K Lui, Mark W Grigg, Michael J Owen

Agent / Active Networks II

A Unified Model of Internet Scale Alerting Services 284
Annika Hinze, Daniel Faensen

Supporting Internet Applications Beyond Browsing: Trigger Processing and Change Notification 294
Ling Liu, Calton Pu, Wei Tang

Mobility and Distributed Databases I

Improving Computer Support for Cooperative Applications over Internet . . 305
J.C. Burguillo, M.J. Fernández, M. Llamas, L. Anido

A Data Registry-Based Approach for Semantic Representation and Exchange of XML Documents 311
Hong-Seok Na, Jin-Seok Chae, Doo-Kwon Baik

Organization of Mobile Networks Under Privacy Constraints 317
Toshihiko Hamano, Hiroki Takakura, Yahiko Kambayashi

Protocol I

Mean Time Offset Protocol for Cluster of Auction Servers over TCP/IP Network 323
Kok Meng Yew, R.M. Zahidur, Sai Peck Lee

A Comparative Analysis of Transition Mechanisms for IPv6/IPv4 Routing Environment 329
Waleed Hosny Sayed, Tarek M. Kamel, Samir Shaheen

Scalable Protocols for the Internet to Reduce Service Time and Server Load 346
P. Krishna Reddy, Masaru Kitsuregawa

Distributed Systems

An Integrated Approach for Flexible Workflow Modeling 354
Yongjie Ren, K.F. Wong, B.T. Low

Integrating Different Signature Purposes in Workflow Systems – A Case Study 360
Karl R.P.H. Leung, Lucas C.K. Hui, Ricky W.M. Tang

Management of Workflow over the Web Supporting Distributed Process Evolution 367
Sang-Yoon Min, Doo-Hwan Bae, Sung-Chan Cho, Young-Kwang Nam

Data Placement and Retrieval Policy For Serving Video Operations through Sequential Access in Video Server 373
Keun-Hyung Kim, Seog Park

A Buffering/Caching Mechanism for Continuous Media Players 379
Zhiyong Peng

Applications

An Agent-Based Environment for Remote Diagnosis, Supervision and Control 385
Reinhold Ploesch, Rainer Weinreich

The Delivery of Effective Integrated Community Care with the Aid of Agents 393
Martin D. Beer, Trevor J. M. Bench-Capon, Andrew Sixsmith

Application of Aglet Technology 399
Rosane Maria Martins, Magali Ribeiro Chaves, Luci Pirmez, Luiz F. Rust

An Internet-Integrated Manufacturing System Prototype 409
Stephen Chi Fai Chan, Vincent Ng, K.M. Yu, Albert Au

Information Retrival and Filtering

Example-Based Chinese Text Filtering Model 415
Lin Hongfei, Zhan Xuegang, Yao Tianshun

Navigation-Dependent Web-Views: Defining and Controlling Semantic Unit of Web Pages 421
Hidenari Kiyomitsu, Katsumi Tanaka

An Efficient Chinese Word Segmentation Algorithm for Chinese Information Processing on the Internet 427
P.K. Wong

Push-Based News Delivery with CORBA 433
Gary Yat Chung Wong, Andy Hon Wai Chun

Web Technologies

Mutual Synergy between Web Caches 439
Ahmed Mokhtar, Gerardo Rubino

Architecture of Object Web 447
Gary Yat Chung Wong, Andy Hon Wai Chun

JWeb: An Innovative Architecture for Web Applications 453
Mario Bochicchio, Roberto Paiano, Paolo Paolini

XML Arouse the Web Architecture Revolution 461
Chai Xiaolu, Cao Jing, Gao Yongqing, Shi Baile

E-Commerce

Knowledge Beads - Approach for Knowledge Representation and Market Place Negotiations for Internet Agents 467
Simon Fong, Chin Kok Poh

AOM: An Agent Oriented Middleware Based on Java 474
Kwang-Jin Paek, Tai-Yun Kim

CORBA-based Open Authentication Service of Electronic Commerce 480
Kyung-Ah Chang, Byung-Rae Lee, Tai-Yun Kim

A Publish/Subscribe Framework: Push Technology in Electronic Commerce 486
Edward C. Cheng

Mobility and Distributed Databases II

SemNet: A Semantic Network for Integration of Databases 495
Jeong-Oog Lee, Doo-Kwon Baik

Reliable Communication Service for Mobile Agent Based on CORBA 503
Byung-Rae Lee, Kyung-Ah Chang, Tai-Yun Kim

Protocol II

Technology of Image Coding for Cell Losses in ATM Transmission 509
Jian Cong, Suo Cong, Zaimin Li, Gansha Wu, Wen Jin

Author Index 517