

Yanchun Zhang Katsumi Tanaka  
Jeffrey Xu Yu Shan Wang  
Minglu Li (Eds.)

# Web Technologies Research and Development – APWeb 2005

7th Asia-Pacific Web Conference  
Shanghai, China, March 2005  
Proceedings

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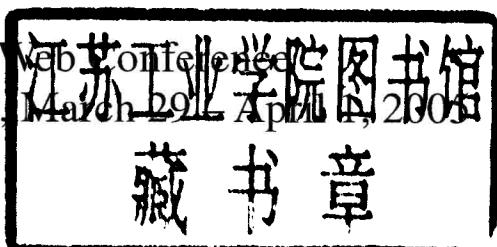


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# Web Technologies Research and Development – APWeb 2005

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Proceedings



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## **A Tribute to Prof. Yahiko Kambayashi (Feb 15, 1944–Feb 6, 2004)**

We dedicate this book to our dear friend and colleague, APWeb 2005 Honorary General Chair, Prof. Yahiko Kambayashi, who passed away on February 6, 2004 after a short illness.

Prof. Kambayashi made many outstanding contributions to the database and Web information systems community. He was one of the pioneers and international leaders of research in database and information systems. He was a cofounder of the Web Information Systems Engineering (WISE) Society and the WISE conference series, and a cofounder and Co-editor-in-Chief of World Wide Web: Internet and Web Information Systems.

He was an IEEE Fellow, WISE Fellow, a winner of the 1995 ACM-SIGMOD Contribution award, a trustee of the VLDB Endowment, chairman of many major international conferences, and an editor of several international journals. Prof. Kambayashi received his Ph.D. from Kyoto University in 1970, and had been a full professor since 1984 at Kyushu University and Kyoto University. He published over 300 papers in major database and information systems journals and conferences such as Information Systems, SIGMOD, VLDB and ICDE. He was the author or editor of over 50 books and conference proceedings.

Prof. Kambayashi supervised over 40 Ph.D. students, many of whom are employed as faculty members at universities in Japan and worldwide. Many of us received support and guidance through his research collaborations and inspirations and his endless willingness to assist. We lost a pioneer, whose expertise, sage advice, and deep insights helped many of us. Those of us who knew him well lost a friend and will miss his generous hospitality and support.

He will be remembered as an outstanding researcher, leader, educator, mentor and friend. Prof. Kambayashi is survived by his wife and two sons. We are all saddened by his sudden departure and would like to express our heartfelt condolences and our deepest sympathy to his family through this book.

January 2005

Maria Orlowska  
Mark Rusinkiewicz  
John Mylopoulos  
Shan Wang  
Katsumi Tanaka  
Yanchun Zhang  
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Qing Li

## Preface

This volume contains papers selected for presentation at the 7th Asia Pacific Conference on Web Technology (APWeb 2005), which was held in Shanghai, China during March 29–April 1, 2005. APWeb is an international conference series on WWW technologies and is the primary forum for researchers and practitioners from both academia and industry to exchange knowledge on WWW-related technologies and new advanced applications.

APWeb 2005 received 420 submissions from 21 countries and regions worldwide, including China, Korea, Australia, Japan, Taiwan, France, UK, Canada, USA, India, Hong Kong, Brazil, Germany, Thailand, Singapore, Turkey, Spain, Greece, Belgium, New Zealand, and UAE. After a thorough review process for each submission by the Program Committee members and expert reviewers recommended by PC members, APWeb 2005 accepted 71 regular research papers (acceptance ratio 16.9%) and 22 short papers (acceptance ratio 5.2%). This volume also includes 6 keynote papers and 11 invited demo papers. The keynote lectures were given by six leading experts: Prof. Ah Chung Tsoi (Australia Research Council), Prof. Zhiyong Liu (National Nature Science Foundation of China), Prof. John Mylopoulos (University of Toronto), Prof. Ramamohanarao (Rao) Kotagiri (University of Melbourne), Prof. Calton Pu (Georgia Tech), and Prof. Zhiwei Xu (Chinese Academy of Sciences).

The conference was co-organized and supported by the National Institute of Information and Communications Technology (NICT), Japan, Shanghai Jiao Tong University, China, Victoria University, Australia, and it was also financially sponsored by National Natural Science Foundation of China, ARC Research Network on Enterprise Information Infrastructure (Australia), Microsoft Research Asia, the WISE Society, and the Database Society of China Computer Federation.

We wish to thank the APWeb conference Steering Committee, the APWeb 2005 Organizing Committee, and the Program Committee members and external reviewers for their dedication in promoting the conference and for their expertise in selecting papers. We wish also to thank the authors for submitting high-quality work to the conference.

With the large number of submissions, we received enormous help from many colleagues and volunteers. In particular, we thank Prof. Qing Li, Ms. Miranda Lee, Ms. Chengqin Ji and Ms. Zhihua Su for their support and help in registration, accommodation and local arrangements, and Dr. Hao Shi, Mr. Cameron Giles, Mr. Mike Ma and Mr. Guangdong Xu for their support in maintaining the paper review system.

Finally, we wish to pay our tribute to our Honorary General Chair, the late Prof. Yahiko Kambayashi, who was heavily involved in the early stage of planning of this conference. Prof. Kambayashi passed away on Feb. 6, 2004 after a short illness. Prof. Yahiko Kambayashi made many outstanding contributions to the Web information

systems community. He was a cofounder of the Web Information Systems Engineering (WISE) Society and the WISE conference series, and a Co-editor-in-Chief of World Wide Web: Internet and Web Information Systems. We have lost a pioneer, whose expertise, sage advice, and deep insights helped many of us. Those of us who knew him well lost a friend and will miss his generous hospitality and support. Prof. Yahiko Kambayashi had been elected a WISE Fellow in early 2004 for his outstanding contribution to Web information systems research and his services to the WISE Society.

January 2005

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