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First International Conference, ICWL 2002
Hong Kong, China, August 2002
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Message from the Conference Chair

The first International Conference on Web-Based Learning (ICWL) was organized by the Hong Kong Web Society, in cooperation with the City University of Hong Kong and Hong Kong Polytechnic University, and was hosted by VLDB 2002. Organizing ICWL 2002 was an exciting and very rewarding experience for me. The rapidly growing demand for e-learning is forcing educational institutions to expand in remote learning through the web in terms of technological and pedagogical development. The conference aims at providing an in-depth study of the technical, educational and management issues of web-based learning. The trend in education is to shift from a traditional teacher-centered learning environment to one that is student-centered.

ICWL 2002 included a regular track and an industrial track, consisting of both invited papers and submitted papers, selected from a collection of 75 submitted papers. The research papers presented in the conference will assist lecturers in effectively teaching their students in all kinds of various subjects through the web. A tutorial session was also offered to conference attendees for special web-based training.

I am thankful for the generous support of the conference sponsors: the City University of Hong Kong through Horace Ip, Hong Kong Polytechnic University through Keith Chan, Lingnan University through Irene Kwan, Hong Kong Pei Hua Education Foundation Limited, and the K.C. Wong Education Foundation. I would like to thank Qing Li and Weijia Jia of City University of Hong Kong for inviting 17 Mainland-China scholars to attend the conference. Li and Jia also reviewed presented papers at the conference for the purpose of publishing selected ones in the Journal of Distance Education Technologies. I appreciate very much the effort of Ronnie Cheung and Cherry Chan of Hong Kong Polytechnic University in organizing and operating the conference web-site, Hong Va Leong of Hong Kong Polytechnic University for contacting Springer-Verlag to arrange publication of the conference proceedings, Reggie Kwan and Jimmy Chan of the Open University of Hong Kong, and Anthony Fong of the City University of Hong Kong for organizing the conference industrial track with the publisher World Scientific, and T.Y. Cheung and Margaret Ng of the City University of Hong Kong for dealing with the conference logistics and local arrangements. Special thanks must go to all conference program committee members for reviewing submitted papers.

ICWL 2002 was also the first international conference organized by the Hong Kong Web Society. The society aims to facilitate web technology transfer among academic and industrial practitioners. The conference steering committee plans to hold the conference every year. On behalf of the Hong Kong Web Society, I am looking forward to your support of the conference next year.

August 2002 Joseph Fong

Message from the PC Co-Chairs

The development of Web-based learning has led to a revolution in traditional teaching methods. The rapidly growing demand for Web-Based Learning is forcing educational institutions to expand remote learning through the Web in terms of technological and pedagogical development. This conference aims at providing an in-depth study of the technical, pedagogical, and management issues of Web-based learning. The Hong Kong Web Society organized the first International Conference on Web-Based Learning (ICWL 2002) in conjunction with the City University of Hong Kong and Hong Kong Polytechnic University to provide a forum to bring together educators, researchers, technologists and implementors of Web-based learning from around the world to discuss the state of the art in this area.

The topics that were covered in the conference exhibit a very concise focus on the topics in Web-Based Learning. The ICWL 2002 conference included various sessions addressing issues such as: Virtual Classrooms, Virtual Laboratories/Universities, Distance Learning Architectures, Infrastructures for Web-Based Learning, Integrated and Collaborative Learning, Cyber Education Initiatives, Management of Learning Resources, Interactive e-Learning Systems, Knowledge Management for e-Learning, Database Architectures for e-Learning, and Multimedia Databases for Web-Based Learning.

The conference committee received 75 submissions from academic researchers from 19 countries. Each paper was sent to at least three international reviewers. Papers were reviewed and selected based on their originality, significance, correctness, relevance, and clarity of presentation. Among the high-quality submissions, 34 papers were selected for presentation at the conference and are included in this volume. The conference also invited well-known international scholars to deliver the keynote speeches and take part in interesting panel discussions. We are delighted to include the invited keynote presentation *A Growing Book for Distance Learning* by Prof. Shi-Kuo Chang.

We would like to thank all the authors who submitted papers, as their effort is the foundation of the success of every conference. Through the efforts of Qing Li and Weijia Jia, the conference also invited well-known scholars from mainland China. Our thanks also go to the international program committee members for their invaluable input and advice. We are also grateful to our sponsors for their generous support. Special thanks go to Prof. T.Y. Cheung, our honorable conference chair, the local team led by Keith Chan (organizing chair), Cherry Chan (conference secretary) for coordinating with the authors, and Hong Va Leong who also helped with the editing of this volume.

We must also express our gratitude to the steering committee members. ICWL 2002 was successful because of the invaluable input and advice from the following steering committee members: Shi-Kuo Chang from the University of Pittsburgh, Joseph Fong from the Hong Kong Web Society, Qing Li from the City University of Hong Kong, Xiaoming Li from Beijing University, Maria Orlowska from the University of Queensland, and Timothy Shih from Tamkang University.

On behalf of the organizing and program committees of ICWL 2002 we trust you found the conference a fruitful experience and hope you had an enjoyable stay in Hong Kong.

August 2002

Ronnie Cheung,. Weijia Jia, Reggie Kwan

First International Conference on Web-Based Learning (ICWL 2002) August 17–19, 2002, Hong Kong, China

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Keynote Speech

A Growing Book for Distance Learning

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Abstract. The Growing Book is an ever-expanding body of knowledge created by a team of experts. It is an electronic book co-developed by a group of teachers who are geographically dispersed throughout the world and collaborate in teaching and research. Since the course materials are constantly evolving, the Growing Book must be constantly updated. The Growing Book is used by each teacher both in the local classroom as well as in the distance learning environment and accessible by multilingual students. Each chapter of he Growing Book is owned by an instructor who may utilize different tools for distance learning, self learning and assessment. A macro university framework provides the experimental test bed to investigate how to design and manage the growing book so that it can be accessed by people with different linguistic skills for effective teaching and research. We describe the basic operations such as Match, Abstract, Weave and Customize, which can be used to extract and organize information from the multi-level, multimedia, multi-lingual book.

1 Introduction

A *Growing Book* is an electronic book co-developed by a group of teachers who are geographically dispersed throughout the world and collaborate in teaching and research. Since the course materials are constantly evolving, the Growing Book must be constantly updated and expanded. The Growing Book is used by each teacher both in the local classroom as well as in the world-wide distance learning environment. Therefore the Growing Book must be accessible by multi-lingual students. The chapters of the Growing Book are owned by different authors who may utilize and/or provide different tools for distance learning, self learning and assessment.

The Macro University provides an experimental test bed for the Growing Book. The Macro University is a distance learning framework consisting of three layers: the micro-university [2], the virtual university, and the macro university. A micro-university is a self-contained learning environment, usually on a single PC (or laptop, notebook, palmtop, PDA, etc.) for a single student interacting with a teacher. A micro-university is designed to serve a single individual, but of course many instances of

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