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NEW ASPECTS OF TELECOMMUNICATIONS AND INFORMATICS

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Proceedings of the 7th WSEAS International Conference on
TELECOMMUNICATIONS and INFORMATICS (TELE-INFO '08)

Editors
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Preface

This book contains the proceedings of the the 7th WSEAS International Conference on TELECOMMUNICATIONS and INFORMATICS (TELE-INFO '08) which was held in Istanbul, Turkey, May 27-30, 2008. This conference aims to disseminate the latest research and applications in the systems, communications and computers.

The friendliness and openness of the WSEAS conferences, adds to their ability to grow by constantly attracting young researchers. The WSEAS Conferences attract a large number of well-established and leading researchers in various areas of Science and Engineering as you can see from **http://www.wseas.org/reports**. Your feedback encourages the society to go ahead as you can see in **http://www.worldses.org/feedback.htm**

The contents of this Book are also published in the CD-ROM Proceedings of the Conference. Both will be sent to the WSEAS collaborating indices after the conference: **www.worldses.org/indexes**

In addition, papers of this book are permanently available to all the scientific community via the WSEAS E-Library.

Expanded and enhanced versions of papers published in these conference proceedings are also going to be considered for possible publication in one of the WSEAS journals that participate in the major International Scientific Indices (Elsevier, Scopus, EI, ACM, Compendex, INSPEC, CSA .... see: www.worldses.org/indexes) these papers must be of high-quality (break-through work) and a new round of a very strict review will follow. (No additional fee will be required for the publication of the extended version in a journal). WSEAS has also collaboration with several other international publishers and all these excellent papers of this volume could be further improved, could be extended and could be enhanced for possible additional evaluation in one of the editions of these international publishers.

Finally, we cordially thank all the people of WSEAS for their efforts to maintain the high scientific level of conferences, proceedings and journals.

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Plenary Lecture I

Microwave Applications other than Communication Fields

Professor Cevdet Akyel
Department of Electrical Engineering and Telecommunication Group
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Abstract: Microwave Energy is intensively used in Communication and Radar Technology. The introduction of the domestic microwave oven in everyday life is known nowadays by a large number of individuals around the world. But today the industry and scientific worlds use microwave energy at different levels of power and at very specified frequencies. These frequencies are called IMS frequencies (Industrial, Medical and Scientific). In some applications microwave power is very suitable for industrial drying and heating of materials . Medical applications of microwave energy present some advantages over conventional hyperthermia treatments. Different energy applications in medical areas are being developed these recent years. Another important question concerns the safety measures and power levels in electronic technology, especially for cellular telephones. Low-level microwave power on health effects are still not so clarified and may concern public health these coming years. Microwave sensors are also an important part of today's technologies. For the development of such techniques, the knowledge of permittivity (dielectric constant and dielectric losses) of material becomes a key factor for such applications. Different methods exist for the measurement of these parameters. Microwave sensing and microwave heating depend heavily on the evolution of these parameters with time, temperature and physical or chemical change of materials under study. More accurate measurements are made with the use of resonant cavities tuned to the frequency of interest. By introduction of a sample into the cavity, resonant frequency and quality factor change. These changes can be related to the complex permittivity or permeability of the material under investigation. Active cavity measurement system permits real-time measurements with microprocessor-based acquisition systems and algorithms.

Brief Biography of the Speaker: Cevdet Akyel was born in Samsun, Turkey. He received his Sup.Ing. degree from Technical University of Istanbul in 1971where he worked as a research assistant and developed first Turkish holograms in microwave laboratory and wrote a book on their scientific applications. He moved to Canada in 1972 to get his MScA and DScA from Ecole Polytechnique de Montreal in 1975 and 1980, respectively. He had engineering positions ion 1974 and 1976 at Northern Telecom of Canada as a system engineer in radio telecommunications. Since 1986, he has been a professor of Electrical Engineering at EcolePolytechnique de Montreal where he teaches Electromagnetic Theory and Automated Microwave Instrumentation. In 1991 he joined the Group of Poly-Grames involved in space electronics and microwave advanced technologies at the same university.His main domains of research interest are the permittivity and permeability measurements with microwave active systems,material characterization of materials(conductive polymers,superconductivity ceramics,ferromagnetic materials, etc) and high power microwave measurements and industrial applications.

Plenary Lecture II

Efficient Parallel Prefix Algorithms on the Multicomputer and Circuit Models

Professor Yen-Chun Lin
Department of Computer Science and Information Engineering
National Taiwan University of Science and Technology
Taipei, Taiwan

Abstract: Prefix computation has been extensively studied for its wide application in fields such as biological sequence comparison, cryptography, design of silicon compilers, job scheduling, image processing, loop parallelization, polynomial evaluation, processor allocation, and sorting. Because of its importance and usefulness, it has been proposed as a primitive operation. In fact, prefix computation is a built-in operation for Message-Passing Interface parallel programming. Many parallel prefix algorithms for various parallel computing models have been proposed. In this lecture, we consider computation-efficient parallel prefix algorithms for message-passing multicomputers and fast prefix algorithms on the combinational circuit model. Precisely, families of new computation-efficient parallel prefix algorithms are first introduced. Fast parallel prefix circuits, including waist-size optimal ones and depth-size optimal ones, are then presented. Properties and merits of these parallel prefix algorithms are also described.

Brief Biography of the Speaker: Yen-Chun Lin received his BS degree in electrical engineering from National Taiwan University in 1977, MS degree in computer engineering from National Chiao Tung University in 1983, and PhD degree in electrical engineering from National Taiwan University in 1988. Since 1988 he has been on the faculty at National Taiwan University of Science and Technology. Dr. Lin has been a full professor since February 1993, in Department of Electronic Engineering before August 2001 and then in Department of Computer Science and Information Engineering. He served as Program Chair of the 2001 International Conference on Parallel and Distributed Computing, Applications, and Technologies and as Guest Editor of The Journal of Supercomputing, March 2003. Dr. Lin received Honorable Mention of Annual Best Paper Award of Journal of Information Science and Engineering in 2001. He was a Visiting Scientist at the IBM Almaden Research Center, San Jose, California, from 1993 to 1994. His research interests include parallel computing and Web-based systems. Dr. Lin is a member of the ACM and the IEEE Computer Society.

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