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Applied Computational Science

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Proceedings of the 13th International Conference on Applied Computer and Applied Computational Science (ACACOS '14)

Kuala Lumpur, Malaysia, April 23-25, 2014

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Preface

This year the 13th International Conference on Applied Computer and Applied Computational Science (ACACOS '14) was held in Kuala Lumpur, Malaysia, April 23-25, 2014. The conference provided a platform to discuss programming languages, software methodologies, software engineering, project management, web engineering, data mining, operating systems, computer networks, wireless communications, network modelling, optical networking technologies etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Computer Input Devices and Biometrics from Brain Electrical Activity

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Abstract: Research in input is centered on the two ends of this channel. First, the devices and techniques computers can use for communicating with people. Second, the perceptual abilities, processes, and organs people can use for communicating with computers. It attempts to find the common ground through which it can be related by studying new modes of communication that could be used for human-computer interaction (HCI) and developing devices and techniques to use such modes. Innovative input devices are providing revolution in the making a brand new type of interaction with computers. All those new devices own significant potential to support biometrics. The future input devices would be addressed in the presentation. Practically, gesture control and brain electrical wave would be focused and demonstrated. The recent progress in machine learning and computing power has been instrumental in the development of modern interdisciplinary research areas, such as biometrics. The goal of biometrics is to recognize and differentiate between humans based on their physical and behavioral characteristics, the most common example is the fingerprint. We have witnessed an increasing number of fingerprint biometric systems, most typically in various government-run person identity databases. Despite its widespread use, the limitations of this approach (e.g., its intrusiveness), have motivated research on alternative biometrics; these include approaches based on signature, face features, palmprint, hand geometry, iris, and voice. The potential benefit of using these alternative biometric modalities is two-fold: 1) they are potentially less prone to forgery and 2) they can be used within a multimodal biometric system. Some of the emerging biometrics techniques include those based on keyboard dynamics, ear force fields, heart signals, odor, and brain signals. The primary task of human-computer interaction is to carry information between the user and the silicon world of the computer. Progress in this area attempts to increase the useful bandwidth across that interface by seeking faster, more natural, and more convenient means for users to transmit information to computers, as well as efficient, salient, and pleasant mechanisms to provide feedback to the user. On the user's side of the communication channel, interaction is controlled by the nature of human attention, cognition, and perceptual-motor skills and abilities; on the computer side, it is controlled only by the technologies and methods that we can invent. Basic research seeks theories and principles that inform us of the parameters of human cognitive and perceptual facilities, as well as models that can predict or interpret user performance in computing tasks. Advances can be driven by the need for new modalities to support the unique requirements of specific application domains, by technological breakthroughs that HCI researchers attempt to apply to improving or extending the capabilities of interfaces, or by theoretical insights suggested by studies of human abilities and behaviors, or even problems uncovered during careful analyses of existing interfaces. These approaches complement one another, and all have their value and contributions to the field.

Brief Biography of the Speaker: Prof. Dr. Hung-Jen Yang got master of industrial technology from University of North Dakota USA in 1989 and Ph.D. of Industrial education and technology from the Iowa State University, USA in 1991. From 1991 to 1994, he worked as an associate professor in Ping-Tong University of Education and was in charge of computer center to promote computer assist instruction and internet-working service. After 1994, he is working for the department of industrial technology education in the National Kaohsiung Normal University. National Science Council in Taiwan had contracted with Dr. Yang for more than twenty research projects in last twenty years. He also supports Ministry of Education by creating information system of teacher in-service education. Technology education and teacher education are two major educational research areas focused by Dr. Yang. Other than educational research, he is also involved deeply with topics of knowledge engineering, communication technology, electronic engineering, and automation technology.