SPECIAL ISSUE ON ADVANCES IN COMPUTER, INFORMATION, AND SYSTEMS SCIENCES, AND ENGINEERING

PREFACE GUEST

EDITORS

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This special issue includes five selected papers presented in the International Conference on Industrial Electronics, Technology & Automation (IETA'05), the International Conference on Telecommunications and Networking (TeNe'05), the International Conference on Engineering Education, Instructional Technology, Assessment, and E-learning (EIAE'05), and the International Conference on Systems, Computing Sciences and Software Engineering (SCSS'05). The papers are a select set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the area of new mathematics and natural computing.

IETA'05, TeNe'05, and EIAE'05 and SCSS'05 were part of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE'05) (www.cisse2005.org), the world's first engineering/computing and systems research e-conference.

CISSE 2005 was the first high-caliber Research Conference in the world to be completely conducted online in real-time via the internet. CISSE 2005 received 255 research paper submissions and included 140 accepted papers from more than 45 countries. The concept and format of CISSE 2005 were very exciting and groundbreaking. The PowerPoint presentations, final paper manuscripts submissions and time schedule for live presentations over the web had been available three weeks prior to the start of the conference for all registrants, so they could choose the presentations they want to attend and think about questions that they might want to ask. The live audio presentations were also recorded and were part of the permanent CISSE archive, which also included all presentations and papers.

IETA'05, TeNe'05, EIAE'05, and SCSS'05 provided a virtual forum for presentation and discussion of the state-of the-art research in Industrial Electronics, Technology & Automation (IETA'05), Telecommunications and Networking (TeNe'05), Engineering Education, Instructional Technology, Assessment & E-learning (EIAE'05), and Systems, Computing Sciences and Software Engineering (SCSS'05). The virtual conferences were conducted through the Internet using web-conferencing tools, made available by the conference. Authors presented their PowerPoint, audio or video presentations using web-conferencing tools without the need for travel. The conferences sessions were broadcasted to all the conference participants, where session participants were able to interact with the presenter during the presentation and (or) during the Q&A slot that followed the presentation. These international conferences were held entirely online. The accepted and presented papers were made available after the conference both on a *CD* and as a book publication by Springer.

The audio rooms of the IETA'05, TeNe'05, and EIAE'05, and SCSS'05 conferences provided superb audio even over low speed internet connections, the ability to display PowerPoint presentations, and cross-platform compatibility (the conferencing software runs on Windows, Mac, and any other operating system that supports Java). In addition, the conferencing system allowed for an unlimited number of participants, which in turn granted us the opportunity to allow all IETA'05, TeNe'05, SCSS'05 and EIAE'05 participants to attend all presentations, as opposed to limiting the number of available seats for each session.

This special issue includes five papers. The first paper by Mojtaba Sabeghi *et al.* presents a fuzzy algorithm for scheduling soft periodic tasks in preemptive real-time systems. The paper proposes a fuzzy scheduling approach to real-time system scheduling in which the scheduling parameters are treated as fuzzy variables. Simulation results are compared with both EDF and LLF scheduling algorithms. The proposed fuzzy approach shows promising results.

The second paper by A. Regalado Ménde *et al.* proposes a linear cascade composition control (master/slave). Two configurations are presented and evaluated in a dynamic model of a continuous stirred tank. From a stability analysis point of view, it is noted that the system assent time is 7 to 8 times reduced compared to the assent time without loop control. Implementation of such control configurations can solve the problem of loop control composition.

The third paper by Andrey N. Dmitriev presents a mathematical model of blast furnace smelting. The presented model allows analyzing the processes of iron reduction along the height of a blast furnace in conditions of non-uniform movement of material and gas along the radius of the furnace.

The fourth paper by J. Berke presents a new spectral fractal dimension. The suggested method proved that with generalization of the box method, fractal dimension-based measurements give practically applicable results in case of an optional number of dimensions.

Finally, the fifth paper by Bougaev *et al.* presents a new method for reducing a training data set in the context of nonparametric classification. The new method is based on the method of *R*-clouds. A data set reduction approach using Rvachev functions-based representation of the separating boundary is proposed. The *R*-cloud method was found instructive and practical in a number of engineering problems related to pattern classification.

We hope that you will find the selected papers, covering the state-of-the-art advances in the area of new mathematics and natural computing to be interesting.