

Special Issue on Selected Paper of the IEEE International Workshop on Computer System Education and Innovation 2008 (IWCSEI 2008)

Guest Editorial

This special issue of JOS contains 12 papers selected from the IEEE International Workshop on Computer System Education and Innovation 2008 (IWCSEI'08). This workshop is sponsored by IEEE and Intel Corporation. The progress of the semiconductor technology has spurred the great changes in computer system. IWCSEI'08 focused on the computer system education and innovations.

The scheduling of real-time jobs is important for computing environments. The paper "A New Slack Reclaiming Algorithm for Real-time Systems" by Wenzhi Chen, Qingsong Shi, Weifang Hu et al presents a new algorithm named HBASH, which is a slack reclaiming algorithm, for server-based real-time systems. The algorithm and the related experiments are both described clearly in this paper.

Embedded systems have intense requirements from power consumption and high performance. Wei Hu, Tianzhou Chen, Qingsong Shi et al propose the new architecture for embedded operating system by taking the scratchpad memory into account in the paper "A Novel Operating System on Chip with Information Security Support for Embedded System". The software-controlled on-chip memory helps the embedded operating system to have lower power consumption and improved performance.

The increasing demands for adaptive middleware of dynamic systems in pervasive computing environments makes the requirement of dynamic software architecture and programming infrastructure emerge. The paper "A Semantic and Adaptive Middleware Architecture for Pervasive Computing Systems" by Qing Wu, Weihua Hu and Ding Wen presents ScudWare, which is a semantic and adaptive middleware architecture and supports for dynamic and heterogeneous environments for this subject. A case study is also described in this paper.

Embedded systems with multiple heterogeneous processors are increasingly popular. The paper "Design and Program Multi-processor Platform for High-performance Embedded Processing" by Yijun Liu and Zhenkun Li presents their approach to support the parallelization in such asymmetric multiprocessor environments. Their description is from both hardware and software.

Jian Xiang and Lu Ye propose a new framework for formative assessment in their paper "A General Software Framework based on Reform in Formative Assessment". Their framework for formative assessment is based on a web-based practice teaching administration platform. The paper gives a clear description of the framework and the practice.

To deal with the limitation of high computational complexity is the subject of the paper "Fast and Robust Moving Objects Detection based on Non-parametric Background Modeling" by Jianping Han, Zhigeng Pan and Mingmin Zhang. The paper describes the mean shift based non-parametric background model for more sensitive and robust detection of moving objects in dynamic outdoor scenes. The experimental results are also given in the paper.

MANET is multi-hop self-configuring network, in which the topology can change dynamically. The paper "Trust Evaluation and Dynamic Routing Decision Based on Fuzzy Theory for MANETs" by Hongjun Dai, Zhiping Jia and Zhiwei Qin presents the trust evaluation and the dynamic routing protocols for MANET based on the classic fuzzy theory. The target of their approach is to reduce the packet drop ration and enhance the throughput and the experimental results prove the efficiency.

Task scheduling algorithms are also key issues for computing grid. The paper "Research on Tasks Scheduling Algorithms for Dynamic and Uncertain Computing Grid Based on a+bi Connection Number of SPA" by Decai Huang, Yuan Yuan, Lijun Zhang et al introduces set pair analysis (SPA) as the new computation method in the task scheduling. And connection number is defined for the uncertain expected time to compute of the tasks. They propose six different scheduling algorithms based on the definitions.

The paper "Based on Quantification Software Quality Assessment Method" by Aimin Yang and Wenxiang Zhang focuses on the topic of software quality. The authors present a quantitative assessing model in the paper. They give a clear overview and the detailed description of the method.

Jianfeng Yang, Puli Yan, Yinbo Xie, Qing Geng et al presents a novel parallel clustering algorithm in the paper "An Efficient Parallel Clustering Algorithm for Large Scale Database". Their algorithm is named Stem-Leaf-Point Plot Clustering Algorithm (SLPPCA), which will create clusters of different shapes and sizes as the basis of the algorithm. They also describe their experiments in detail.

The complexities in practical software development are still the key issues. Minghui Wu and Hui Yan give an exploration in system dynamics through a case study in the paper "Simulation in Software Engineering with System Dynamics: A Case Study". Their approach encapsulates collective knowledge of software engineering fields as the contents inside. They use Brooks' Law and the effects of Pair Programming in eXtreme Programming (XP) as the case in the paper.

Youtian Qu, Chaonan Wang, Lili Zhong, Huilai Zou et al propose an agent component-based architecture for

software development in the paper “Research for an Intelligent Component-Oriented Software Development Approaches”. They combine the advantages of software agents and software components in their architecture to reduce the complexity of software development.

We would like to thank all the authors and especially the reviewers of IWCSEI’08 and this special issue. Their work led to the improvement in the quality of these papers.

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Dr. Tianzhou Chen was born in Lishui, Zhejiang Province of China in 1970. He entered Zhejiang University mixed class (Honors Program of Engineering), in 1990, and obtained his B.S. degree in computer software in 1994. He studied for M.S. degree in computer architecture, and received his PH.D degree in computer application from Zhejiang University in 1998. He is a PROFESSOR of computer science at Zhejiang University. His current research is computer architecture and embedded system. Prof. Chen is the member of IEEE, ACM and senior member of CCF (China Computer Federation).