Editorial Preface

Cyberworlds and Education

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INTRODUCTION

This special issue “Cyberworlds and Education” is based on papers presented at the 2003 International Conference on Cyberworlds (held in Singapore, December 3-5, 2004). This conference was organized by the School of Computer Engineering of the Nanyang Technological University.

Cyberworlds are information worlds formed on the web either intentionally or spontaneously, with or without visual design. As information worlds, they can be virtual or real, or both. In terms of information modeling, the theoretical ground for cyberworlds is far above the level of integrating spatial database models and temporal database models. In conjunction with web-based activities, cyberworlds have been leading the real world in finance, business, commerce, manufacturing and politics. Although a GDP equivalent has been traded on the web in a day for years already, yet little research has been carried out on cyberworlds.

CW2003 received many valuable submissions. The 66 accepted papers from 21 different countries let us form 10 parallel sessions:

- philosophy, ethics, law & security of cyberworlds
- cyber learning
- cyber business
- cyber museums
- cyber information
- distributed simulation and distributed virtual environments
- shared and virtual worlds
- geometric modeling and visualization for cyberworlds
- intelligent agents
- data mining and warehousing

The conference proceedings were printed by the IEEE Computer Society press. To order, visit http://www.computer.org/cspress/catalog/pr_01922.htm or http://www.ntu.edu.sg/sce/cw2003/cw2003.htm. The papers appearing in this special issue are five updated and revised papers presented at “Cyber Learning” sessions of the conference.

JOURNAL DETAILS

The first paper, submitted from Singapore, reviews the processes which the Nanyang Technological University adopted in adding the human touch to traditional e-learning projects. This paper may serve as a good case study for other institutions with a similar aim to achieve interactive and engaged online learning. This includes the proliferation in the use of the video talking head format synchronized with the lecture presentation, live audio-video delivery, text chat and document annotations of a lecture presentation and delivery.
The second paper, submitted from France, presents a distributed virtual reality environment for children called EVE—Environnements Virtuels pour Enfants. This virtual environment supports cooperation among members of a dispersed team engaged in a concurrent context. By the mean of their avatars, users are allowed to interact and to give decisions using cooperative mechanisms. A user-friendly interface enables teachers to create their own stories that fit with children pedagogical requirements and generates new virtual environments according to teacher’s specifications.

The third paper, also submitted from France, studies virtual environments for training in operational conditions. The principal developed idea is that these environments are heterogeneous and open multi-agent systems. The physical environment represents the phenomena that learners and teachers have to take into account. The social environment is simulated by agents executing collaborative and adaptive tasks. These agents realize, in team, procedures that they have to adapt to the environment. The users participate to the training environment through their avatar.

The fourth paper, from Korea, presents educational possibilities of the web-based virtual experiment environments in the science education. The authors developed virtual experiment environments on a web designed compatible to the learner levels through level analysis in the learning contents. The developed virtual experiment environment supports students to learn scientific phenomena and concepts focusing on radiation balance, the earthquake waves, the earth’s crust structure, the movement of sea water, and solar system in the middle school’s science subject.

The fifth paper, submitted from Japan, presents the Topdown eLearning System (TDeLS) for hardware logic design courses. This system is based on the cellular models. The TDeLS offers learners the materials based on the top-down, goal-oriented method, according to the learners’ demands and purposes. Moreover, the TDeLS can distribute them to the learners through the Internet, and manage the database for learning materials. The authors employed the cellular models that ensure the consistency among design modules and support a top-down design methodology. This paper also presents the basic XML vocabulary designed to describe hardware modules efficiently, and a brief introduction to the structure and functions of the proposed system which implements the TDeLS.

Finally, in the sixth paper submitted from Norway the author uses different theoretical approaches on artifacts and experiences of usage of a virtual world which she has created to revise the original design and to derive a new set of requirements for virtual places and spatial artifacts.

ACKNOWLEDGMENTS

I am extremely grateful to Professors Shi-Kuo Chang and Timothy K. Shih, co-editors-in-chief of this journal, for the opportunity to showcase the best conference papers in the area of cyber learning. I hope this fruitful cooperation will continue. Next conference on Cyberworlds, CW2004, will be held in Tokyo November 18-20, 2004. Other conferences will be organized annually in Singapore and other countries.
Alexei Sourin is an associate professor in the School of Computer Engineering at the Nanyang Technological University, Singapore. He received his MSc and PhD in computer science from the Moscow Engineering Physics Institute (1983 and 1988, respectively). From 1983-1993, he worked at the Moscow Engineering Physics Institute and since 1993 he is an academic staff of the Nanyang Technological University. He is a member of the IEEE Computer Society and ACM SIGGRAPH. His research interests include computer graphics, shared virtual environments, shape modeling, and web visualization. He is a head of the e-Learning Unit in his school and is a pioneer and enthusiast of electronic education in Singapore. He was a program chair of CW2003 and is an international program chair of CW2004. For more details, visit http://www.ntu.edu.sg/home/assourin.