Emerging Computer Technologies in Education

Selected papers from the
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Preface

This book provides a tutorial introduction to and illustrations of current research on the applications of intelligent computer technologies in education. The book is based on a set of invited tutorials and research presentations, together with the best submitted papers and a panel discussion at the International Conference on Computers in Education (ICCE 93) held in Taiwan in December 1993. The conference, which has now been developed as a regular event in the Asia-Pacific Rim region, was intended to introduce, support and stimulate the research communities of this region in this rapidly growing research and development field.

The range of topics covered in this book, besides giving examples of the latest technological applications, provides a balanced and comprehensive coverage of the field, and thus can serve the same purpose for the international community. The emphasis on new technologies is apparent in this book: There are chapters on artificial intelligence techniques, learning environments, authoring systems, hypermedia, and distributed learning, as well as more fundamental topics such as learning theories, cognitive diagnosis, metacognition and empirical studies. A prominent theme, which was manifest at the conference and is reflected in this book, is the recognition that technology per se is not the answer to educational problems but that full account has to be taken of social, situational and motivational factors.

The chapters are divided into several categories. The first six chapters are tutorials which provide a picture of several lines of current research. The next six chapters are the best submitted papers, on various topics, including distributed multimedia tutoring environments, error diagnosis, empirical assessment, and applications of artificial intelligence techniques such as machine learning, knowledge representation, dependency maintenance, and natural language processing, with domains varying from second language learning to training computer-based design. The next five chapters report the latest research of the invited speakers of the conference. The final chapter is a transcript of the panel concerning motivational factors and comparing and relating them with the role of cognition in the study of computer-assisted learning. It will not be a surprise if there is a flood of game oriented "educational" software produced from industry in the near future, but whether students will learn from such software remains unknown. This panel triggers and highlights various views of this timely topic from the academic community.

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Tutorials