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Hongbin Zha
Zhigeng Pan
Hal Thwaites
Alonzo C. Addison
Maurizio Forte (Eds.)

Interactive Technologies and Sociotechnical Systems

12th International Conference, VSMM 2006
Xi'an, China, October 2006
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Preface

We are very pleased to have the opportunity to bring forth the proceedings of the 12th International Conference on Virtual Systems and Multimedia (VSMM), held in Xi'an, China, in October 2006. This was the first time that VSMM was sited in China. This year, the main topic of the conference was new developments and solutions for cultural heritage, healthcare, gaming, robotics and the arts, focusing on the latest advances in the interdisciplinary research among the fields.

We received over 180 submissions of papers from many countries. Finally 59 regular papers were selected for presentation at the conference and inclusion in the proceedings. In order to provide a quality conference and quality proceedings, each paper was reviewed by at least two reviewers. The international program committee and reviewers did an excellent job within a tight schedule and we are proud of the technical program we put together.

Many people contributed to the conference. We first wish to thank the Virtual Systems and Multimedia Society, who provided strong support to the whole process of the preparation of the conference. In particular, we would like to express our thanks to Takeo Ojika, Daniel Pletinckx (VSMM 2006 conference adviser) and Mario Santana Quintero for their organizational work.

We are grateful to Nanning Zheng, Yuehu Liu, and Jianru Xue from Xi'an Jiaotong University for their hard work on the local arrangements. Special thanks to Jiaying Wang, and Ling Chen from Tsinghua University, and Xiaohong Jiang from Zhejiang University.

Last but not least, we would like to express our gratitude to all the contributors, reviewers, international program committee and organizing committee members, without whom the conference would not have been possible.

October 2006

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A Novel Parameter Learning Method of Virtual Garment

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Abstract. In this paper we present a novel parameter learning and identification method of virtual garment. We innovate in the ordinary parameter identification process and introduce the fabric data (Kawabata Evaluation System data) to combine the expert's knowledge with fuzzy system. With our method the parameters of virtual garment can be calculated automatically which are assigned by the animator's experience and hard to tune in the past years. The statistic analysis and machine learning method are used to build the fuzzy system to present the fabric expert's knowledge. With interactively inputting the human subjective variables to our method, the animator who knows little knowledge in physical attributes of fabric material can also create and tune the virtual garment application. The experimental results indicate that this method can be used in practical virtual environments and has the expansibility to other applications.

1 Introduction

Cloth simulation and virtual garment have gained researchers' public concern in the virtual reality area. One of the most essential problems in virtual garment simulation is how to effectively learn and identify the parameters of the cloth in order to make the virtual garment vivid and natural[2,3]. Because the simulations of virtual garment are difficult to tune by the reason that so many parameters need to be adjusted to achieve the look of a particular fabric. At the same time the lack of fabric knowledge also makes the problem a difficult one. Therefore, some researchers carried out some studies about parameter identification of the cloth simulation recently[2,3].

The former parameter learning methods are basically under some specific learning models, such as video of real cloth [2] or theoretic finite element method model[3]. Although these approaches have good results in specific domains, the computational expends of these methods are high and their learning data are synthetic. Moreover, few of the former method are interactive to the animators. How to use fabric experts' knowledge from real data and make the learning method suit for practical application is a great challenge to the researchers both from virtual reality field and from machine learning area.