Proceedings

IEEE International Workshop on

Model-Based 3D Image Analysis

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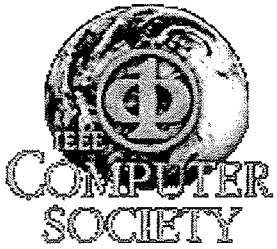

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Model-Based Segmentation

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PRESENTATION

These last years have seen the multiplication of 3D images due to the development and improvement of new acquisition devices (CT-Scan, MR, 3D ultrasound, confocal microscopy, seismic imagery, Cyberware range laser, etc.) in several application fields (medicine, molecular biology, geology, industry, paleontology, etc.). Such 3D images are very large, difficult to interact with, and contain very complex non-polyhedral structures. In order to obtain precise and reliable results within a reasonable computation time, 3D image processing algorithms are very often based on *models*, i.e., simplified and synthetic representations of complex entities.

3D image analysis based on models lies at the conjunction of different research fields in computer vision. Thus, the design of a model involves mathematical formulations to define its geometry, its shape, and its physical or mechanical behavior. To obtain realistic models, we must infer parameters from very large image databases that involve reconstruction and registration methods. A model will then integrate constraints that will greatly improve the quality of results in segmentation, matching, and tracking algorithms, or the realism in physical simulation or virtual reality applications.

A fantastic opportunity was given by IEEE International Conference on Computer Vision chairmen to gather the researchers of the field. It was proposed to organize associated workshops and, immediately, we thought about a workshop on Model-Based 3D Image Analysis. After the proposal was kindly accepted by Computer Society authorities, we started receiving papers from research teams located in different countries and continents, proving both the large variety of research on the topic and the interest in the Computer Vision community.

Each paper was reviewed by three members of the Program Committee under the supervision of the Scientific Board composed of authoritative people in the field. Based on the reviewers recommendations, 12 of the 16 papers received were accepted for an oral presentation and inclusion in the proceedings. These papers, in conjunction with the invited talk, give a large overview of most of the open research problems in Model-Based 3D Image Analysis.

We would like to thank the Scientific Board for their helpful advice, and the Program Committee for the difficult review work. This international workshop exists thanks to the help and the sponsorship of the IEEE Computer Society and its Technical Committee on Pattern Analysis and Machine Intelligence headed by K. Bowyer and S. Shafer. We have also received the informal but efficient help of INRIA, the French National Institute of Research in Computer Science and Automatics. We would like also to give special thanks to M. Johnson from IEEE and J. Bertot from the EPIDAURE Project, INRIA for their help.

We hope that this IEEE International Workshop will be an exciting meeting and moreover, that it will give rise to new research ideas for future conferences!!!

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