

Preface

Scientific Visualization and Imaging Systems include multidisciplinary areas, with applications in many knowledge fields such as Engineering, Medicine, Material Science, Physics, Geology, Geographic Information Systems, among others.

Scientific Visualization in this volume is understood as the science field that involves the visual representation of data acquired from experiments. As an expansion of this idea, it is also possible to include data examination generated by mathematical-physical modeling. Imaging Systems encompass any subject related to digital images, from fundamental requirements for a correct image acquisition to computational algorithms that make it possible to obtain relevant information for image analysis.

In this context, the International Conference on Advanced Computational Engineering and Experimenting (ACE-X) included in its program a Special Session on Scientific Visualization and Imaging Systems in 2010. This session aimed to stimulate discussion on researches that involve the use of digital images as an understandable approach for analyzing and visualizing phenomena, experiments, and cases. Since ACE-X 2010, which was held in Paris, paper submission considering any digital imaging topic and scientific visualization has been encouraged, which brings technological innovation on its methods and applications.

This book is a selection of 13 revised and extended research papers presented in the International Conference on Advanced Computational Engineering and Experimenting (ACE-X) Conferences 2010 (Paris), 2011 (Algarve), 2012 (Istanbul), and 2013 (Madrid). The examples were particularly chosen from materials research, medical applications, general concepts applied in simulations and image analysis, and other related interesting problems.

Although the book does not cover the entire universe of possible applications in Scientific Visualization and Imaging Systems, it presents important contributions that can benefit students and researchers that deal with visualization and imaging analysis.

Hence, I hope that all book chapters can be useful to those who are interested in developing research in such important field.

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