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Advances in Multiresolution for Geometric Modelling

With 163 Figures

Springer

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Preface

This book marks the culmination of the four-year EU-funded research project, Multiresolution in Geometric Modelling (MINGLE). The book contains seven survey papers, providing a detailed overview of recent advances in the various fields within MINGLE, and sixteen research papers. Each of the seven parts of the book starts with a survey paper, followed by associated research papers in that area.

All papers were originally presented at the MINGLE 2003 workshop held in Cambridge, UK, 9–11 September 2003. Over the course of the three day workshop there were thirty-one presentations covering the whole range of topics within the MINGLE project. From those presentations, this book contains twenty-three papers, one by an invited speaker and the rest by members of the project. All papers have been refereed by an international panel.

Our thanks go to the authors and referees for their hard work, which has made this an excellent collection of recent work in the field. We would also like to thank Martin Peters, Ute McCrory, and Leonie Kunz at Springer-Verlag in Heidelberg and Peggy Glauch at Le-TEX in Leipzig for guiding this book from initial concept to finished product.

Cambridge
March 2004

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Michael Floater
Malcolm Sabin

The MINGLE project

MINGLE was a European Union Research Training Network with nine partners from six countries. The project ran from January 2000 to January 2004. Its main objectives were: (1) to train young European researchers in various aspects of multiresolution in geometric modelling, and (2) to accelerate the research effort in this area with regard to both theoretical advances and industrial and commercial applications. The first objective was undoubtedly achieved: thirty-four young researchers were funded by the project and over a hundred researchers attended the project's Summer School in August 2001 in Munich[1]. There have also been a large number of academic publications arising from the project, showing that the second objective has been met; this book bears just some of the fruit of the research undertaken over the course of the project.

The research topics of the MINGLE project included: thinning of triangle meshes; coding of triangle meshes; remeshing; multiresolution deformation; hierarchical meshes; data structures for hierarchical and nested triangulations; subdivision surfaces; wavelets in geometric modelling; and surface parameterization.

The nine MINGLE partners were:

- SINTEF Applied Mathematics, Oslo, Norway
- Tel-Aviv University, Israel
- Munich University of Technology, Germany
- Israel Institute of Technology (TECHNION), Haifa, Israel
- Max-Planck-Institut für Informatik, Saarbrücken, Germany
- Laboratoire de Modélisation et Calcul, Université Joseph Fourier, Grenoble, France
- Computer Laboratory, University of Cambridge, Cambridge, UK
- Department of Computer and Information Sciences (DISI), University of Genova, Italy
- Systems in Motion AS, Oslo, Norway

[1] The tutorial lectures given at the Summer School formed the basis for the companion volume *Tutorials on Multiresolution in Geometric Modelling*, A. Iske, E. Quak, and M. S. Floater (eds.), Springer-Verlag, 2002, ISBN 3–540–43639–1.

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We would like to thank our sponsors for their support. The European Union funded the MINGLE project as a Fifth Framework Research Training Network (Contract Number HPRN–CT–1999–00117). Emmanuel College, Cambridge, UK was the venue for the MINGLE 2003 workshop, 9–11 September 2003, and it provided extra funding to allow PhD students from outside the project to attend the workshop.

Referees

We would like to thank our panel of referees, including those who chose to remain anonymous, for their efforts and their attention to detail. Each paper was refereed by at least one senior member of the MINGLE project and at least one expert external to the project. We would like to extend special thanks to Carsten Mönning for his help in administering the refereeing process.

Internal referees
Pierre Alliez
Georges-Pierre Bonneau
Neil Dodgson
Nira Dyn
Michael Floater
Craig Gotsman
Stefanie Hahmann
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Ioannis Ivrissimtzis
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