

Preface

Over the last decade, computer graphics (CG) modeling has developed considerably, bringing greater fidelity and interaction in many applications. However, subjects such as fluids and virtual humans continue to pose CG challenges. The symposium “Mathematical Progress in Expressive Image Synthesis” (MEIS2013) was held in Fukuoka, Japan, in October 21–23, 2013, as a unique venue where mathematicians, CG researchers, and those who work in industry came together to investigate these difficult subjects. Moreover, the symposium was intended to trigger novel research directions such as exploring the mathematics of visual perception.

This volume presents the papers selected from the MEIS2013 proceedings, which was originally issued as *MI Lecture Notes* Vol. 50, Kyushu University, 2013. The book comprises five parts in order to organize the papers for mathematical scientists, graphics researchers, and industry programmers as well. Part I presents several mathematical frameworks and approaches relevant to CG and vision issues on a widespread scale. Each theme of Part II–IV is a more specific 2D/3D CG issue regarding photorealistic rendering, texture and sound synthesis, visual simulation of fluids, surface deformation/editing, and character locomotion. Part V presents papers on how to utilize 2D image databases for practical applications. The underlying mathematical subjects involve discrete differential geometry, Lie theory, computational fluid dynamics, function interpolation, and learning theory. We therefore hope the readers will find themselves deeply inspired through the harmony of mathematics and graphics research displayed in this volume.

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