Preface

The research institute EURANDOM (European Institute for Statistics, Probability, Stochastic Operations Research and its Applications) was established in 1997 on the campus of Eindhoven University of Technology, The Netherlands. Its mission is to foster research in the area of stochastics and its applications. It achieves this mission by recruiting and training talented young researchers and helping them to find their way to tenured positions in academia and industry, and by carrying out and facilitating research through postdoctoral and graduate appointments, visitor exchange and workshops. Its chief mission statement has been given nationwide support in The Netherlands by a recently installed national cluster called STAR (Stochastics—Theoretical and Applied Research), for which EURANDOM acts as coordinating and facilitating node.

As part of its workshop programme, EURANDOM organized a series of international workshops on image processing and analysis. The third one in this series was the workshop on *Locally Adaptive Filters in Signal and Image Processing*, November 24–26, 2008, focusing specifically on locally adaptive methods. The ability of a system to adapt to the local state is important in many problems in image analysis. Many renowned young experts were invited to give overview talks on this theme covering state-of-the-art and novel research.

Despite the high quality of contributions, no proceedings of this workshop have been issued. Instead, the workshop initiated a collaborative effort, focusing more generally on mathematical methods for signal and image analysis and representation. The results of this effort are described in this book.

Contributions have been carefully selected to be representative for a variety of generic approaches as well as to illustrate formal connections among these. Roughly speaking deterministic methods are central to the first half of the book, whereas the second half considers mainly statistical methods. However, some chapters in the middle of the book clearly encompass both approaches, and more than a hundred cross-references throughout the book emphasize the many formal connections and analogies that exist between seemingly different paradigms.

This book differs from most existing books on medical signal and image analysis or computer vision to the extent that it does not focus on specific applications (al-

though some are detailed for the sake of illustration), but on *methodological frameworks* on which such applications may be built. This book should therefore be of interest to all those in search of a suitable methodological basis for specific applications, as well as to those who are interested in fundamental methodologies per se.

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