

Preface

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This special issue of *The Visual Computer* contains expanded versions of eight papers presented at Sibgrapi 2011, the 24th Conference on Graphics, Patterns, and Images. Sibgrapi is the most traditional meeting in Latin America on Computer Graphics, Image Processing, Pattern Recognition and Computer Vision. In 2011, Sibgrapi was hosted in the beautiful city of Maceió, Alagoas, Brazil, being organized by the Instituto de Matemática of Universidade Federal de Alagoas, and supported by Petrobras, CNPq, CAPES, FAPEAL, UFAL, SBM, and SBC.

Thanks to *The Visual Computer*'s editor in chief Nadia Magnenat-Thalmann, this issue presents eight papers selected from a pool of 46 papers presented during the technical sessions of the conference. They represent the main topics inside visual computing, from computational topology and modeling to rendering, visualization, and simulation.

From Computational Topology, the first paper, entitled "Efficient computation of 3d Morse-Smale complexes and persistent homology using discrete Morse theory," enjoys the reduced representation offered by the Morse complex to efficiently compute persistence of gray-scale images.

In Geometric Modeling, the second paper, entitled "Conic-like subdivision curves on surfaces," presents a natural extension of Bézier splines on surfaces based on geodesic conic subdivision.

In Surface Reconstruction, the third paper, entitled "Texturing 3D models from sequential photos," proposes to map textures using both geometric features and image contours, extending the process to models without detailed geometry.

Between Modeling and Rendering, the fourth paper, entitled "A method for clipping splats on sharp edges and corners," prevents rendering artifacts appearing when splatting near sharp features by efficiently cutting nearby splats.

The fifth paper, entitled "Volume rendering of unstructured hexahedral meshes," introduces a direct method for rendering general hexahedral meshes with accurate tri-linear interpolation.

In Visualization, the sixth paper, entitled "Generating optimal drawings of physically realizable symbol maps with integer programming," effectively solves the NP-problem of arranging and scaling symbols representing data on maps.

In Image Retrieval, the seventh paper, entitled "Class-specific metrics for multidimensional data projection applied to CBIR," combines pattern recognition tasks, class-specific metrics and multidimensional projections for content-based image retrieval.

The last paper, entitled "Crowd simulation: applying mobile grids to the social force model graph," provides a coherent model based on social force and mobile grids in order to more realistically simulate pedestrian dynamics.

The richness of this issue and Sibgrapi papers in general can be mainly credited to the authors and to the reviewers that we solicited a lot!

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