Contents

Part I – Visualization Techniques

E. Deines, F. Michel
On the modification of phonon tracing 1

A. Middel
A Framework for Visualizing Multivariate Geodata 13

T. Bobach, G. Umlauf
Natural Neighbor Concepts in Scattered Data Interpolation and Discrete Function Approximation 23

R. Mohr, T. Bobach, Y. Hijazi, G. Reis, P. Steinmann, H. Hagen
Comparative Tensor Visualisation within the Framework of Consistent Time-Stepping Schemes 36

S. Thelen, T. Bierz, B. Müller, H. Hagen, A. Ebert, E. Friauf, J. Meyer
A Framework for the Visualization of Brain Structures 54

T. Bierz, A. Ebert, J. Meyer
GPU Accelerated Gesture Detection for Real Time Interaction 64

Part II – Visualization of Application Data

C. B. Hirschberger, S. Ricker, P. Steinmann, N. Sukumar
Deriving Global Material Properties of a Microscopically Heterogeneous Medium – Computational Homogenisation and Opportunities in Visualisation 76

R. Mohr, A. Menzel, P. Steinmann
Finite Elasto-Plasto-Dynamics â Challenges & Solutions 88

H. A. Meier, P. Steinmann, E. Kuhl
Towards completeness, a multiscale approach of confined particulate systems. 103

P. R. Schmitt and P. Steinmann
Geometric Numerical Integration of Simple Dynamical Systems 115

O. Rübel, G.H. Weber, M.-Y. Huang, E.W. Bethel, S.V.E. Keränen, C. C. Fowlkes, C. L. Luengo Hendriks, A. H. DePace, L. Simirenko, M. B. Eisen, M. D. Biggin, H. Hagen, J. Malik, D.W. Knowles, B. Hamann
PointCloudXplore 2: Visual Exploration of 3D Gene Expression 125

C. v. Malottki
Geomodeling and Geovisualizations in Urban Planning und Real Estate Industry: The Example of Office Market Research 138

Part III – Surveys

Y. Hijazi, H. Hagen , C. D. Hansen, K. I. Joy
Why interval arithmetic is so useful 148

A. Knoll
A Survey of Implicit Surface Rendering Methods, and a Proposal for a Common Sampling Framework 164

B. Lehner, G. Umlauf, B. Hamann
Survey of Techniques for Data-dependent Triangulations 178

Colorplates 188