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Visualization in Medicine and Life Sciences II

Progress and New Challenges

With 132 Figures, 116 in color

Springer

Editors
Lars Linsen
Jacobs University, Bremen
School of Engineering and Science
Postfach 75 05 61
28725 Bremen
Germany
l.linsen@jacobs-university.de

Bernd Hamann
Institute for Data Analysis and Visualization
Department of Computer Science
University of California, Davis
One Shields Avenue
Davis, CA 95616-8562
U.S.A.
hamann@cs.ucdavis.edu

Hans Hagen
Universität Kaiserslautern
FB Informatik
Postfach 30 49
67653 Kaiserslautern
Germany
hagen@informatik.uni-kl.de

Hans-Christian Hege
Zuse Institute Berlin (ZIB)
Visualization and Data Analysis
Takustr. 7
14195 Berlin
Germany
hege@zib.de

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Preface

Medicine has for a long time been a major driver for the development of data processing and visualization techniques. Many exciting and challenging visualization problems are continually arising in medicine as a consequence of our ability to generate increasingly large and complicated data (image data, simulated data) that require us to devise effective tools for meaningful interpretation and utilization in medical practice. The first VMLS workshop, which led to the book entitled "Visualization in Medicine and Life Sciences (VMLS)," was driven by the fact that emerging technologies in the life sciences had produced significant data visualization challenges. One interesting question was: Can medical data visualization approaches be devised and/or improved to meet these challenges with the promise of ultimately being adopted by medical experts.

Life sciences are understood by us in a broad sense, including animal and human biology, biochemistry, bioinformatics, biomathematics, food sciences, environmental sciences, and pharmacology. Different data acquisition technologies lead to different types of data, including both spatial and non-spatial data. The aim of the second international VMLS workshop was to document and discuss the progress that had been made since the first workshop and to explore what novel solution approaches for data processing and visualization had been developed and what new challenges had come up.

Internationally leading experts from the visualization and driving medical application areas came together for this second workshop held in Bremerhaven, Germany, in July 2009. Research and survey papers were solicited and peer-reviewed, ultimately leading to the collection of papers included in this book.

The research topics covered by the papers in this book deal with these themes:

- Feature Extraction
- Classification
- Volumes and Shapes
- Tensor Visualization
- Visualizing Genes, Proteins, and Molecules

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Bremen, Germany — *Lars Linsen*
Kaiserslautern, Germany — *Hans Hagen*
Davis, California, U.S.A. — *Bernd Hamann*
Berlin, Germany — *Hans-Christian Hege*

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