

Preface

As many areas in science and engineering are relying more and more heavily on computational science, the analysis of extremely large and complex data sets is becoming ever more crucial. Even though they are a comparatively recent development, topological techniques have proven highly valuable in this context as they can provide a high level, abstract view of data which is well aligned with human intuition. As a result, topological concepts often translate directly into features of interest in various applications and thus can reduce the time-to-insight.

The quick rise in popularity of topological techniques has led to an interest and exciting state of the art that spans the entire gamut of analysis of extremely large data to fundamental, theoretical work. Similar to previous events, TopoInVis 2013 was designed to provide a forum for research in the entire spectrum of techniques to be discussed with a focus on experimental solutions for open problems. The event was held in Davis, California, on the beautiful campus of the University of California with the gracious support of the Scientific Computing and Imaging Institute of the University of Utah and the Computer Science Department at UC Davis. The two and a half day event led to a number of interesting discussions on the current state of the art in topological research as well as interesting panel discussions and off-line research collaborations. The conference was followed by an open call for contributions to this volume in which all presenters as well as the community at large was invited to submit novel research contributions. This resulted in 17 interesting chapters ranging from contributions to flow field analysis to applications in medical and material science.

Topological Methods in Data Analysis and Visualization

III

Theory, Algorithms, and Applications

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