Vis 2019 Application Spotlight Session

Title:
Visualization Software Development for Researchers and End Users - from general issues to specific challenges for medical applications

Abstract:
Visualization has evolved into a mature field of science; it has become widely accepted as a standard approach in diverse fields, ranging from physics over medicine to business intelligence. Over the years, many methods and tools have been developed and published, however, most of these are prototypes and never reach a state that can be reliably used by domain scientists. The prototypes are often neither sustainable nor extensible for subsequent research projects. Additionally, current problems and data sets have grown so large and complex that novel methods require an exceedingly large amount of engineering to approach. This barrier to entry is a major hindrance for new Ph.D. students, which have no time budget for software engineering but have to produce research results. The vis community has no mechanism for amortizing development time. Thus, we either need to find a way to enable developing sophisticated and novel visualizations with minimal overhead or we need to incentivize and reward developing mature visualization applications and frameworks.

We recently organized a Shonan seminar (#145) addressing this topic. As a group, we identified nine topics for visualization software in general that require significant attention, with a special focus on research challenges. As one part of the discussion, we want to give a detailed perspective on medical visualizations, which results in more severe constraints and challenges: Software designed for clinical daily routine can require years until its deployment due to extensive test phases and legal processes.

Generally, requirements for successful visualizations differ from the requirements for successfully publishing a paper in the VIS community, i.e. scientific novelty does not speak for its applicability in daily routine. For example, the number of novel VIS contributions in the medical area does not directly translate into a larger number of VIS techniques being used in the clinical setting.

The proposed spotlight will be organized similar to a panel discussion. We will give one primer talk summarizing the Shonan seminar and one detailing the specific issues of medical visualization ourselves. Subsequently, four invited panelists will give additional perspectives on the problems: Chris Johnson, David Laidlaw, Paul Navratil and Thomas Wischgoll. There will be ample time for discussion since we want to give the vis community as a whole the opportunity to extend and refine the scope of the problem and to join the efforts of the seminar attendees to tackle these challenges. One specific outcome of this session will be a rough concept for a follow-up Dagstuhl meeting on this topic.