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The Gap between Visualization Research and Visualization Software

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Keynote

Approaches for the Successful Delivery of Open-source Visualization Software

James Ahrens
Los Alamos National Laboratory

Abstract

In this talk, I will describe approaches to successful creation of open-source visualization software. In summary, these approaches include defining and following clear project objectives and community policies, the use of agile software engineering methods, and the use of continuous integration and deployment practices. I believe these approaches are scalable from small to large teams. These approaches were developed and refined over the course of my career. During my career, I have researched, developed, and deployed open-source software tools including ParaView, a large-scale scientific visualization tool, Cinema, an image database approach for visual analysis, PISTON, a portable data parallel visualization library, ALPINE, in situ visualization infrastructure and algorithms, and, DSI, a data science infrastructure project. Real-world successes and failures during the development of these approaches and tools will be discussed. In addition, specific challenges of facing researchers and developers of visualization software, such as user interface development, user testing, use of graphics software and hardware libraries, and performance and portability concerns will also be discussed.

Capstone

From Tiny Brains Through Raging Rivers to Mars - The Winding Path From Research Prototypes to Mature and Sustainable Software Frameworks

Katja Bühler
VRVis Research Center

Abstract

Software prototypes developed as part of research projects are often a rich source of novel innovative approaches to solving real-world problems. Yet there are few examples where such prototypes have evolved into mature and sustainable software or even products. The challenges involved are manifold - from the right composition of the team to the selection and maintenance of the technology to sustainable funding over many years, just to name a few.

VRVis is an Austrian research center for visual computing with the mission to bring scientific research results into application. Since its founding in 2000, several software frameworks have emerged that today form a foundation for basic research at VRVis, but are also the subject of large-scale applied research projects supported by industry, government, and academia. Many of these frameworks have evolved from initial research ideas and prototypes into a large software base that is actively used and subject to constant evolution and change. I will present a selection of these frameworks and provide practical insights into the history and strategies of the various teams behind the software creating a sustainable product. Showing that there is not a single and straight path to success, but many, I invite you to take this as an inspiration for finding your way to develop your own software towards a sustainable framework.