EGPGV 2019

19th Eurographics Symposium on Parallel Graphics and Visualization

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Table of Contents

Table of Contents

Preface

This book contains the proceedings of the 19th Eurographics Symposium on Parallel Graphics and Visualization (EGPGV), which took place in Porto, Portugal, on the 3rd of June, 2019.

In this day and age, high-performance graphics and visualization solutions are required in a variety of domains, ranging from making sense of the huge amounts of data coming out of simulations and sensing devices, to delivering real-time immersive experiences that simulate virtual worlds. Such systems are implemented on hardware platforms that are rapidly increasing in complexity, in terms of increasing concurrency, heterogeneity, and depth of memory and storage hierarchies. These factors present unique challenges, to which our community responds with novel methods and approaches for parallel and high-performance graphics and visualization. The EGPGV Symposium aims at fostering the exchange of experiences and knowledge exploiting and defining new trends in this important computer science area.

The papers program presents contributions that introduce novel parallel systems and techniques. This year, we received a total of 25 high-quality submissions, each of which underwent extensive review by a diverse International Program Committee, consisting of 24 persons from around the world having broad and deep expertise in parallel graphics and visualization. Each contribution was independently reviewed by at least four IPC members, selected by the chairs according to their preferences, expertise, and conflicts. The members were assigned as either primary or secondary reviewers. After all the reviews were completed, the primary reviewer of each contribution led an online discussion among all co-reviewers and was responsible for writing a summary review and recommendation. This active discussion clarified issues with the papers and helped develop consensus about decisions. Based on the reviewers' recommendations, the individual reviews, the online discussions, and after a thorough deliberation by the program co-chairs, 12 of the 25 submissions were selected for inclusion in the final program, which corresponds to an acceptance rate of 48%.

This year's papers program covers a variety of subjects, including efficient GPU rendering, in situ processing, parallelization of visualization algorithms, and more.

This year's keynote was delivered by Ivan Viola of the King Abdullah University of Science and Technology (KAUST). He presented on automated visualization, which we very much believe will be an important solution for in situ processing when there is no human in the loop.

We would like to thank Stefanie Behnke (Eurographics) for her help with handling the publications and invaluable assistance with the reviewing system, respectively. We would also like to thank Gleb Tkachev of the University of Stuttgart, who served as the Student Program Chair. Finally, we would like to thank all the members of the IPC, the external reviewers, our sponsor Nvidia, the authors, and the keynote speaker without whom this symposium would not have been possible.

Hank Childs, Steffen Frey, and João Pereira
Porto, Portugal, June 2019

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Author Index

Keynote

Automated Visualization: the Future of In Situ Processing?

Ivan Viola

Abstract

Supercomputing trends, in particular I/O rates, are forcing simulation codes away from the traditional model of storing data to disk and then visualizing post hoc, and towards an in situ model where data is processed as it is generated. While in situ processing solves many problems, it also creates new problems. In this presentation, I will focus on one of these problems, specifically that in situ processing frequently has no human in the loop, and so the visualization process must be automated. In cases where the desired visualization algorithms and their settings are known a priori, the automation process is not difficult. But in cases where the algorithms and their settings are unknown, it will be up to the visualization program to decide how to proceed. This new direction can tap into a decade of previous research by our community on automating visualizations, i.e., choosing the best camera locations, transfer functions, etc., by using an algorithm rather than a human directing the process. In this talk, I will summarize this decade of research, with a special focus on my work.

Short Biography

Ivan Viola is researching scalable technology for interactive molecular visualization with the ultimate goal of constructing, visualizing, and modeling the entire complex biological cell at atomistic detail. This technology will allow people to interact, explore, study, and understand the life at nanoscale.