Smart Tools and Applications in Graphics
–
Eurographics Italian Chapter Conference

Cagliari (Italy)
17 – 18 November 2022

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Preface

The Smart Tools and Applications in Graphics (STAG) conference is the annual international conference organized by the Italian Chapter of the Eurographics association. The aim of the conference is the dissemination of research activities and novel ideas on both theoretical and application oriented aspects of Computer Graphics, bringing together researchers and practitioners from both national and international scientific community to share their latest developments.

In the 2022 edition, the conference solicited contributions (both research, software and dataset) on ways to solve real problems, clever solutions to either optimize or otherwise improve known techniques and algorithms for real-world applications, systems and workflow papers with documented impact on real-world applications. The general aim has been to create a good opportunity for displaying and discussing ideas, and to foster research activities in all areas of Computer Graphics, Computer Vision, Visual Computing, Human-Computer Interaction, and related disciplines.

Organized by the University of Cagliari, STAG 2022 was held on November 17-18, 2022. After a few years of the coronavirus pandemic, we were delighted to restart the conference in person and it was pleasant to meet up again.

This year, we received 23 submissions: 17 full papers and 6 posters; 14 full papers and 6 posters have been accepted. Each submission was peer-reviewed by three members from the International Program Committee. The IPC included 41 members from different countries, who have valuable expertise in Computer Graphics, Computer Vision, Computer-Human Interaction and related disciplines. For each submission, the reviewers were selected by the chairs according to their expertise and conflicts. The final decision about acceptance has been made by the program co-chairs after on-line discussions, based on the reviewers’ recommendations and the individual reviews.

STAG 2022 had the pleasure to invite as keynote speakers Marcel Campen, professor at Osnabrück University, Germany, heading the Graphics & Geometric Computing group, and Sybren A. Stüvel, senior developer in the Blender Foundation. Marcel Campen gave a keynote talk titled “Aspects of Algorithmic Reliability in Geometry and Graphics”, which described recent successful advances in the field of mesh parameterization, specifically focusing on formal guarantees of validity, quality and reliability. Sybren A. Stüvel gave a keynote talk titled “Simpler, Better, Faster, Stronger: distributed rendering with Flamenco” on distributed rendering with the Flamenco v3.

STAG 2022 would not have been possible without contributions by many people. We thank all the submitters, and the members of the International Program Committee, who provided high-quality reviews and precious comments for authors to improve their contributions. We also thank all the session chairs and the local organizers.

Last but not least, these proceedings result from the invaluable contribution of Stefanie Behnke from Eurographics, who tirelessly worked with the paper and poster co-chairs on the proceedings production.
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Abstract

A characteristic of numerous problems and tasks in Computer Graphics in general and Geometry Processing in particular is the existence of not only one, but an entire space of acceptable solutions, possibly differing in quality or other details. Often, what makes a result acceptable is defined by hard requirements on the one hand, and soft desiderata on the other hand. One could distinguish these as aspects of result validity and result quality, respectively. Not rarely, algorithmic methods in our field address these two aspects in a combined manner, for instance using optimization formulations that simultaneously aim for high quality and validity. There are many examples where this leads to (minor or major) reliability issues in the sense that not even validity of results can be strictly guaranteed in general. This question, to what extent success can be guaranteed and expected properties be assured, however, is an aspect of strongly increasing importance, in industrial, academic, and personal applications alike, as ever larger amounts of data are to be handled in increasingly automated contexts. In this talk, based on a variety of recent successful advances, benefits of a dedicated distinct consideration and treatment of validity and quality aspects will be discussed. By first focussing dedicatedly on establishing validity, before then taking care of quality on top, reliability gaps can more easily be avoided and formal guarantees be provided. We will look at examples that illustrate this principle, including a novel reliable approach to a classical broadly relevant problem from the field of mesh parametrization.

Short Biography

Marcel Campen is a professor at Osnabrück University, Germany, heading the Graphics & Geometric Computing group. Previously he was a researcher at New York University, USA, after receiving his PhD from RWTH Aachen University, Germany. His research concerns meshing, mapping, and related geometric and algorithmic problems, in 2D and 3D, with a particular focus on aspects of reliability and robustness. His scientific contributions have been recognized by the Eurographics Association with a Best PhD Thesis Award and the Young Researcher Award 2020. He is a Eurographics Junior Fellow and serves as Associate Editor of Computer Graphics Forum.
Invited Speaker

Simpler, Better, Faster, Stronger: distributed rendering with Flamenco

Sybren A. Stüvel  
Blender Foundation

Abstract

Distributed rendering has become an important issue for users in need of an efficient high-quality rendering services. To address this need, the Blender Foundation has released in Summer 2022 Flamenco v3. Aimed at simplicity and interactivity, this render management software is now considered to be featured and stable enough that anyone can use it in their production. In this talk, Dr. Sybren A. Stüvel, chief designer of the project, will show how to get it working for various situations, from simple use at home to the setup used by Blender Studio for their current production.

Short Biography

Hi, I’m Sybren A. Stüvel. I work as Blender developer, where I oversee the Animation & Rigging module, and work on pipeline tooling, the dependency graph, and the integration of various file formats. Apart from my work on Blender, I also develop various other Open Source projects, such as Python-RSA and Skyfill.