GCH 2020

Eurographics Workshop
on
Graphics and Cultural Heritage

Online Event
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Preface

These are the proceedings of the 18th EG Workshop on Graphics and Cultural Heritage (GCH) 2020, held November 18-19. When in 2019 it was appointed Granada as hosting city of this event, no one in the steering committee could imagine that a few months later the whole world would be in a crisis such as the COVID-19 pandemia. It is evident that the worldwide lockdown since the first trimester of the year has affected enormously all the areas of our life.

Our research community also has suffered the consequences of the health restrictions. Despite being most of us from the Computer Graphics area, and usually do not need any more than a computer and an Internet connection to develop our algorithms and solutions, the concrete field of graphics applied to Cultural Heritage requires quite a lot of fieldwork in museums, archaeological sites or monuments, which have been closed almost entirely during 2020. And hence, few novel techniques and applications have been developed in the last months.

Given this situation, we were aware from spring that it was going to be quite difficult to run this workshop in the classical manner, and in september we realized that it was not going to be so easy to receive submissions, as the community was involved in other task such as developing the mandatory digital transformation of many of our processes as academics, or managing the dichotomy of working at home while attending the family.

It is the time to thank all the community for acting as a real community and moving forward all together to run also in 2020 this event. We are very grateful to the GCH Steering Committee, especially Karina Rodríguez-Echevarría, for their support and help in managing this unexpected and novel situation. Also, we thank Franco Niccolucci, in his role as Editor-in-Chief of the ACM Journal on Computing and Cultural Heritage for supporting the selection of GCH best papers and their invitation to submit extended versions to the journal.

We had to delay as much as we could the submission deadlines, pushing a lot of pressure on the members of the GCH 2020 International Programme Committee who dedicated many hours of thorough reviewing and providing thoughtful reviews of great help for authors. They did a great job in such difficult circumstances in such a short period of time. Stefanie Behnke, from EG Publishing, who diligently has produced the proceedings probably in the shortest time ever. And the authors that submitted their work, received reviews and in a flash slot of time updated their works and produced the CRC versions. To all of you: THANK YOU.

The technical programme received 21 submissions in the three tracks: full papers (11), short papers (9) and posters (1). In each track, each paper was reviewed by at least three international experts in the field for technical quality and novelty, with final decisions made by the IPC co-chairs. After that process, this proceedings consists of 7 full papers, 7 short papers (3 of them were initially submitted as full paper and proposed as short paper to authors) and 3 posters (2 of them coming from short papers submissions).

This year the scientific program consists of a keynote lesson, two full papers sessions, two short paper sessions and one poster session. In the keynote session, Dr. Ivan Sipiran will illustrate the connection between computer graphics and artificial intelligence techniques in the field of cultural heritage. Technical sessions deal with traditional topics in our area, as 3D Geometry and Modelling, VR/AR Applications, Image Processing, 3D Data Management and Visualization or Applications for Museums. Finally, we have also invited a set of experts to deal with two specific topics of interest in the current situation: how the pandemic has affected research in our discipline, and how can our discipline help in recovering cultural tourism after the crisis passes.

We would like to thank our sponsors, the University of Granada and the Spanish Chapter of Eurographics. That sponsorship has allowed us to offer free registration to the regular attendees and request only a small registration fee to authors to cover part of the publishing costs. Hopefully, next year will be much better and we will meet again.

Francisco-Javier Melero
Michela Spagnuolo

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Keynote

Shape Analysis for Cultural Heritage Applications

Ivan Sipiran
Assistant Professor in the Department of Computer Science at the University of Chile

Abstract
This talk is a journey through the potential symbiosis between cultural heritage and shape analysis. On the one hand, the availability of 3D digitization techniques for CH objects has opened a myriad of possibilities for automatic computational tools. On the other hand, the maturity of shape analysis facilitates the adoption of advanced techniques to understand the properties of 3D representations and geometric structure of objects. An excellent example of this symbiosis is the virtual restoration of CH objects. Using shape analysis, we can devise practical algorithms to analyze 3D shapes' surface, and therefore use this knowledge to restore damaged materials. In this talk, we will present our efforts to use the regularity and redundancy in 3D shapes in the restoration problem. This journey starts with the relation between symmetric structures, heat diffusion processes, and the synthesis of missing geometry and ends with our recent experiments on learning the redundancy of 3D data with data-driven deep-learning approaches.