



Preface the visual computer (vol 37 issues 09–11)

Nadia Magnenat Thalmann¹

Accepted: 28 July 2021 / Published online: 21 August 2021

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Welcome to the special issue of the 38th Computer Graphics International conference (CGI 2021). CGI is one of the oldest international conferences in Computer Graphics in the world. It is the official conference of the Computer Graphics Society (CGS), a long-standing international computer graphics organization. The Visual Computer is the Official Journal of the Computer Graphics Society.

CGI conference has been held annually in many different countries across the world and has gained a reputation as one of the key conferences for researchers and practitioners to share their achievements and discover the latest advances in Computer Graphics. This year, CGI2021 is online as the pandemic is still everywhere. It is organized by MIRALab at the Computer Research Centre (CUI) at the University of Geneva during September 6–9, 2021. All video papers accepted for the Visual Computer Special Issue and orally presented at the conference are available on the CGI2021 YouTube Channel.

This special issue is composed of 37 best papers from CGI 2021. CGI2021 has received 158 submissions and the acceptance rate for the Visual Computer is 23%. To ensure the highest quality of publications, each paper has been reviewed by at least three experts in the field, most of them from the editorial board of the Visual Computer.

We would like to express our deepest gratitude to all the PC members and external reviewers who have provided high quality reviews timely. We would also like to thank all the authors for their contribution to the conference CGI2021 and particularly for this special issue.

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<http://www.cgs-network.org/cgi21/>

List of Articles in this special issue

The selected 37 papers of CGI 2021 are organized in the following 10 sections, covering the fundamentals as well as the most advanced research topics in Computer Graphics as listed below.

TVC 1 Geometric Computing

1. Dennis Bukenberger and Hendrik Lensch. Tetrahedra of Varying Density and Their Applications.
2. Guillaume Damiand, David Coeurjolly and Pierre Bourquat. Stripped halfedge data structure for parallel computation of arrangements.
3. Jie Jiang, Hock Soon Seah, Quan Chen and Hong Ze Liew. Handling Gaps for Vector Graphics Coloring.
4. Shengjun Liu, Tao Liu, Yuanyuan Shang and Xinru Liu. Variational Progressive-Iterative Approximation for RBF-based Surface Reconstruction.

TVC 2 Rendering & Textures 1

5. Hiroki Okuno and Kei Iwasaki. Binary Space Partitioning Visibility Tree for Polygonal and Environment Light Rendering.
6. Yifan Lu, Siyuan Fu and Ning Xie. Denoising Monte Carlo Renderings via a Multi-Scale Featured Dual-residual GAN.
7. Nianchen Deng, Jiannan Ye, Nuo Chen and Xubo Yang. Towards Stereoscopic On-vehicle AR-HUD.
8. Jinkai Hu, Milo Yip, Guillermo Elias Alonso, Shihao Gu, Xiangjun Tang and Xiaogang Jin. Efficient Real-time Dynamic Diffuse Global Illumination Using Signed Distance Fields.

TVC 3 Rendering & Textures 2

9. Xinyang Guan, Likang Luo, Honglin Li, He Wang, Chen Liu, Su Wang and Xiaogang Jin. Automatic

✉ Nadia Magnenat Thalmann
thalmann@miralab.ch

¹ MIRALab-CUI, University of Geneva, Battelle, Building A, 7, Route de Drize, 1227 Carouge, Geneva, Switzerland

embroidery texture synthesis for garment design and online display.

10. Yuanzhen Li, Wenjie Li, Shengjie Zheng, Fei Luo and Chunxia Xiao. Self-supervised Monocular Depth Estimation Based on Image Texture Detail Enhancement.
11. Alex R. C Lima, Manuel M. Oliveira, Arthur M. Medeiros and Vitor G. Marques. Real-Time Simulation of Accommodation and Low-Order Aberrations of the Human Eye using Light-Gathering Trees.
12. Hansoo Kim, Jean-Michel Dischler, Holly Rushmeier and Bedrich Benes. Edge-based Procedural Textures.

TVC 4 Physics-based Simulation

13. Ick Hoon Cha and Hyeong Seok Ko. BLI-Resolver: Resolving the Boundary-Loop-Interior Type Intersections for Clothing Simulation.
14. Naoyuki Hirasawa, Takashi Kanai and Ryoichi Ando. A Flux-Interpolated Advection Scheme for Fluid Simulation.
15. Xincheng Liu, Yi Chen, Haitong Zhang, Yuhong Zou, Zhangye Wang and Qunsheng Peng. Physically-based modeling and rendering of avalanches.
16. Wentao Chen, Tian Sang, Yitian Ma, Qian Chen, Yuwei Xiao, Zhigeng Pan and Xubo Yang. Real-Time Simulation of Violent Boiling in Concentrated Sulfuric Acid Dilution.

TVC 5 Visual Analytics

17. Qiru Wang, Robert Laramée, Arron Lacey and William Pickrell. LetterVis: A Letter-Space View of Electronic Health Records.
18. Zhihua Chen, Jun Qiu, Bin Sheng, Xiaobing Zhou, Ping Li and Enhua Wu. GPSD: Generative Parking Spot Detection Using Multi-Clue Recovery Model.
19. Jiqing Zhang, Kai Zhao, Bo Dong, Yingkai Fu, Yuxin Wang, Xin Yang and Baocai Yin. Multi-domain Collaborative Feature Representation for Robust Visual Object Tracking.
20. Victor Araujo, Bruna Dalmoro and Soraia Musse. Gender analysis in computer graphics characters.

TVC 6 Human Poses & Gestures

21. Guiqing Li, Zihui Wu, Yuxin Liu, Yongwei Nie and Aihua Mao. 3D Hand Reconstruction from A Single Image Based on Biomechanical Constraints.
22. Yuanzhen Li, Wenjie Li, Shengjie Zheng, Fei Luo and Chunxia Xiao. Self-supervised Monocular Depth Estimation Based on Image Texture Detail Enhancement.
23. Md Shopon, A S M Hossain Bari and Marina Gavrilova. Residual Connection Based Graph Convolutional Neural Networks for Gait Recognition.

TVC 7 Shape Modelling/Analysis

24. Dennis Bukenberger and Hendrik Lensch. Be Water my Friend: Mesh Assimilation.
25. Shuangbu Wang, Nan Xiang, Yu Xia, Lihua You and Jianjun Zhang. Real-time surface manipulation with C1 continuity through simple and efficient physics-based deformations.
26. Ruggero Pintus, Alberto Jaspe-Villanueva, Antonio Zorcolo, Markus Hadwiger and Enrico Gobbetti. Practical and Efficient Model for Intensity Calibration of Multi-Light Image Collections.
27. Mohamed Radwan, Stefan Ohrhallinger and Michael Wimmer. Occlusion-Based Point Cloud Exploration Using a Linear-Time Structure.

TVC 8 VR/AR

28. Minyeong Seo and Hyeongyeop Kang. Towards Virtual Stair Walking.
29. Rui Ding and Shiguang Liu. Underwater sound propagation for virtual environments.
30. Miguel Saura-Herreros, Angeles López and Jose Ribelles. Spherical panorama compositing through depth estimation.
31. Christos Mousas and Dominic Kao. Evaluating virtual reality locomotion interfaces on collision avoidance task with a virtual character.

TVC 9 Image Analysis/Processing

32. Kun Hu, Xiaochao Wang, Jianping Hu, Hongfei Wang and Hong Qin. A Novel Robust Zero-Watermarking Algorithm for Medical Images.
33. Luying Li, Junshu Tang, Zhou Ye, Bin Sheng and Lizhuang Ma. Unsupervised Face Super-Resolution via Gradient Enhancement and Semantic Guidance.
34. Yunhui Xiong, Zuxuan Lin, Guiqing Li, Chuhua Xian and Changxin Peng. Camera Focal Length from Distances in A Single Image.
35. Soham Mukherjee. Denoising with Discrete Morse Theory.

TVC 10 Computer Vision

36. Haolong Li, Zizheng Zhong, Wei Guan, Chenghao Du, Yuxiang Wei, Yu Yang and Chen Ye. Generative Character Inpainting Guided by Structural Information.
37. Yixuan Ju, Jianhai Zhang, Xiaoyang Mao and Jiayi Xu. Adaptive Semantic Attribute Decoupling for Precise Face Image Editing.

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