



Preface The Visual Computer (Vol 38 issues 09–10)

Nadia Magnenat-Thalmann¹

Accepted: 21 July 2022 / Published online: 22 August 2022

© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2022

Welcome to the special issue of the 39th Computer Graphics International conference (CGI 2022). 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, CGI2022 is still online as the pandemic prevents many researchers to come to Geneva.

The conference CGI is organized from September 12 to September 16, 2022, by MIRALab at the Computer Research Centre (CUI) of the University of Geneva, in Switzerland. All presentations are online.

In addition to the general conference CGI2022, the traditional workshop ENGAGE is again taking place during the first day of the conference. In a parallel session on the first day, we have invited speakers for the workshop in Cultural Heritage (CH) as well as a distinguished CH panel.

This special issue is composed of 37 best papers from papers submitted to CGI 2022. CGI'2022 has received in total 212 submissions and the acceptance rate for the Visual Computer is 17.4%. 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 PC members, Associate Editors of the Visual Computer, and external reviewers, who have provided timely high-quality reviews. We would also like to thank all the authors for their contribution to the conference CGI2022 and particularly for this special issue.

✉ Nadia Magnenat-Thalmann
thalmann@miralab.ch

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

Conference chairs

Jian Jun Zhang, Bournemouth University, UK

Nadia Magnenat Thalmann, MIRALab, University of Geneva, Switzerland

Program chairs

Jinman Kim, Sydney University, Australia

George Papagiannakis, University of Crete, Greece

Bin Sheng, Shanghai Jiao Tong University, China

Daniel Thalmann, EPFL, Switzerland

<http://www.cgs-network.org/cgi22/>

List of articles in this special issue

The selected 37 papers of CGI 2022 are organized in the following sections, covering the fundamentals as well as the most advanced research topics in Computer Graphics and image processing and analysis as listed below.

Face and object detection

1. Zhiwen Shao, Yong Zhou, Bing Liu, Hancheng Zhu, Wen-Liang Du and Jiaqi Zhao. **Facial Action Unit Detection via Hybrid Relational Reasoning**
2. Chenxing Xia, Yanguang Sun, Xiuju Gao, Bin Ge and Songsong Duan. **DMINet: Dense Multi-scale Inference Network for Salient Object Detection**
3. Sikai Wang, Jin Yang, Deng Chen, Jin Huang, Yanduo Zhang, Wei Liu, Zhaohui Zheng and Yanan Li. **LiteCortexNet: Towards Efficient Object Detection at Night**

Deep learning

4. Jiaqi Guan, Min Meng, Tianyou Liang, Jigang Liu and Jigang Wu. **Dual-level Contrastive learning Network for Generalized Zero-Shot Learning**
5. Feng Yan, Wushouer Silamu, Yanbing Li and Yachuang Chai. **SPCA-Net: A based on spatial position relationship co-attention network for visual question answering**

6. Yu Luo, Menghua Wu, Qingdong Huang and Jian Zhu. **Joint feedback and recurrent deraining network with ensemble learning**

Image analysis and processing 1

7. Takato Yoshikawa, Yuki Endo and Yoshihiro Kanamori. **Diversifying Detail and Appearance in Sketch-Based Face Image Synthesis**
8. Yue Jin, Zhaoxin Li, Dengming Zhu, Min Shi and Zhaoqi Wang. **Automatic and Real-time Green Screen Keying**
9. Yucheng Xie, Zehang Lin, Zhenguo Yang, Huan Deng, Xingcai Wu, Xudong Mao, Qing Li and Wenyin Liu. **Learning Semantic Alignment from Image for Text-guided Image Inpainting**
10. Zhihao Ma, Mengke Yuan, Jiaming Gu, Weiliang Meng, Shibiao Xu and Xiaopeng Zhang. **Triple Strips Attention Mechanism Based Natural Disaster Images Classification and Segmentation**

Image analysis and processing 2

11. Xiaochao Wang, Mingzhu Wen, Xiaodong Tan, Huayan Zhang, Jianping Hu and Hong Qin. **A Novel Zero-watermarking Algorithm based on Robust Statistical Features for Natural Images**
12. Jia Chen, Zhenpeng Fu, Jin Huang, Xinrong Hu and Tao Peng. **Boosting Vision Transformer for Low-resolution Borehole Image Stitching through Algebraic Multigrid**
13. Xiaowei Zhang, Wufei Ma, Gunder Varinlioglu, Nick Rauh, Liu He and Daniel Aliaga. **Guided Pluralistic Building Contour Completion**

Registration and segmentation

14. Gustavo Netto and Manuel Oliveira. **Robust Point-Cloud Registration based on Dense-Point Matching and Probabilistic Modeling**
15. Hang Liu, Mengke Yuan, Tong Wang, Peiran Ren and Dong-Ming Yan. **LIST: Low Illumination Scene Text Detector with Automatic Feature Enhancement**
16. Yanping Fu, Qiaoqiao Chen and Haifeng Zhao. **CGFNet: Cross-Guided Fusion Network for RGB-Thermal Semantic Segmentation**
17. Youcheng Song, Zhengxing Sun, Qian Li, Yunjie Wu, Yunhan Sun and Shoutong Luo. **Learning Indoor Point Cloud Semantic Segmentation from Image-Level Labels**

Rendering and colors

18. Shumeet Baluja. **A Natural Representation of Colors with Textures**
19. Yanzhen Chen, Jixiang Zhou and Xiaogang Jin. **Fast Probe-Leaking Elimination Using Mask Decomposition**
20. Grigoris Tsopouridis, Ioannis Fudos and Andreas-Alexandros Vasilakis. **Deep Hybrid Order-Independent Transparency**
21. Che Shen, Robert Wanat, Jang Jin Yoo, Junwoo Jang and Mark Fairchild. **Measuring and Modeling Display Observer Metamerism**

Shape modelling and analysis

22. Shengjun Liu, Haibo Wang, Ling Hu, Qinsong Li and Xinru Liu. **Incremental Functional Map for Accurate and Smooth Shape Correspondence**
23. Adnan Firoze, Bedrich Benes and Daniel Aliaga. **Urban Tree Generator: Spatio-Temporal and Generative Deep Learning for Urban Tree Localization and Modeling**
24. Qi Liu, Bin Sheng and Lizhuang Ma. **PointALCR: Adversarial Latent GAN and Contrastive Regularization for Point Cloud Completion**
25. Dena Bazazian, Cindy Grimm, Bonnie Magland, Erin Chambers and Kathryn Leonard. **Perceptually grounded quantification of 2D shape complexity**

Image analysis and processing 3

26. Xinrong Hu, Junyu Zhang, Jin Huang, Jinxing Liang, Feng Yu and Tao Peng. **Virtual try-on based on attention U-Net**
27. Ye Liu, Liang Wan, Fan Lyu and Wei Feng. **Fine-Grained Scale Space Learning for Single Image Super-Resolution**
28. Zixun Yu, Manuel Oliveira and Daniel Aliaga. **Preemptive Text Warping to Prevent Appearance of Motion Blur**
29. Wangkang Huang, Zhenyang Zhu, Xiaodiao Chen, Ligeng Chen, Kentaro Go and Xiaoyang Mao. **Image Recoloring for Red-Green Dichromats with Compensation Range based Naturalness Preservation and Refined Dichromacy Gamut**

Geometry and topology

30. Daniel Stroeter, Johannes Sebastian Mueller-Roemer, Daniel Weber and Dieter Fellner. **Fast Harmonic Tetrahedral Mesh Optimization**
31. Daniel Klötzl, Tim Krake, Youjia Zhou, Ingrid Hotz, Bei Wang and Daniel Weiskopf. **Local Bilinear Computation of Jacobi Sets**
32. Yi Chen, Qinghui Zhang, Zeli Guan, Ying Zhao and Wei Chen. **GEMvis: A Visual Analysis Method for the**

Comparison and Refinement of Graph Embedding Models

VR/AR

33. Myoung Gon Kim, JiSeok Ryu, Jaemin Son and Junghyun Han. **Virtual Object Sizes for Efficient and Convenient Mid-air Manipulation**
34. Benjamin Brennecke, Rene Weller and Gabriel Zachmann. **Redirected Walking in Virtual Reality with Auditory Step Feedback.**
35. Hui Liang and Xiaohang Dong. **A Game Training Model of Children's Cognitive Ability Based on Piaget's Cognitive Theory**

Simulation and animation

36. Pengfei Liu, Qianwen Chao, Henwei Huang, Qiongyan Wang, Zhongyuan Zhao, Qi Peng, Milo K. Yip, Elvis S. Liu and Xiaogang Jin. **Velocity-based Dynamic Crowd Simulation by Data-Driven Optimization**
37. Yifan Chu, Zhen Liu, Tingting Liu and Yanjie Chai. **Physical simulation of shaking and falling effect of objects in door earthquake scenario**

International program committee

Yiannis Aloimonos, University of Maryland, United States
 Andreas Aristidou, University of Cyprus, Cyprus
 Selim Balcisoy, Sabanci University, Turkey
 Loic Barthe, IRT – Université de Toulouse, France
 Sebastiano Battiato, University of Catania, Italy
 Jan Bender, RWTH Aachen University, Germany
 Bedrich Benes, Purdue University, United States
 Werner Bengler, AHM Software GmbH, Austria
 Stefan Bruckner, University of Bergen, Norway
 Katja Bühler, VRVis, Austria
 Y Cai, Nanyang Technological University, Singapore
 Tolga Capin, TED University, Turkey
 Jian Chang, Bournemouth University, United Kingdom
 Falai Chen, Department of Mathematics, University of Science and Technology of China, China
 Jie Chen, Hong Kong Baptist University, Singapore
 Jie Chen, University of Oulu, Finland
 Renjie Chen, University of Science and Technology of China, China
 David Coeurjolly, CNRS – LIRIS, France
 Frederic Cordier, Université de Haute Alsace, France
 Massimiliano Corsini, University of Modena and Reggio Emilia, Italy
 Rémi Cozot, LISIC, France
 Naser Damer, Fraunhofer, Germany
 Zhigang Deng, University of Houston, United States
 Amal Dev P, TU Delft, Netherlands

Jean-Michel Dischler, University of Strasbourg, France
 Parris Egbert, Brigham Young University, United States
 Petros Faloutsos, York University, Canada
 Bin Fan, University of Science and Technology Beijing, China
 Jieqing Feng, Zhejiang University, China
 Ioannis Fudos, University of Ioannina, Greece
 Issei Fujishiro, Keio University, Japan
 Xifeng Gao, Florida State University, United States
 Christoph Garth, Technische Universität Kaiserslautern, Germany
 Marina Gavrilova, University of Calgary, Canada
 Enrico Gobetti, CRS4 Visual Computing, Italy
 Laurent Grisoni, University of Lille, Science & Technologies, France
 Yunqing Guan, Singapore Institute of Technology, Singapore
 Stefan Guthe, TU Darmstadt, Germany
 Eckhard Hitzer, International Christian University, Japan
 Junhui Hou, City University of Hong Kong, Hong Kong
 Ruizhen Hu, Shenzhen University, China
 Huang Hua, Beijing Institute of Technology, China
 Kei Iwasaki, Wakayama University, Japan
 Xiaogang Jin, Zhejiang University, China
 Ramakrishna Kakarala, “Omnivision Technologies, Inc.”, United States
 Prem Kalra, IIT Delhi, India
 Takashi Kanai, The University of Tokyo, Japan
 Daniel Keim, University of Konstanz, Germany
 Hyungseok Kim, Konkuk University, South Korea
 Jinman Kim, Sydney University, Australia
 Stefanos Kollias, National Technical University of Athens, Greece
 George Alex Koulteris, Durham University, United Kingdom
 Arjan Kuijper, TU Darmstadt, Germany
 Tsz Ho Kwok, Concordia University, Canada
 Yu-Kun Lai, Cardiff University, United Kingdom
 Seungyong Lee, POSTECH, South Korea
 Xiaodan Liang, Carnegie Mellon University, American Samoa
 Di Lin, Shenzhen University, China
 Ligang Liu, University of Science and Technology of China, China
 Shiguang Liu, Tianjin University, China
 Nadia Magnenat Thalmann, University of Geneva, Switzerland
 Xiaoyang Mao, University of Yamanashi, Japan
 Stefano Mattoccia, Department of Computer Science and Engineering, Italy
 Bochang Moon, GIST, South Korea
 Shigeo Morishima, Waseda University, Japan

- Soraia Musse, Pontificia Universidade Catolica do Rio Grande do Sul, PUCRS, Brazil
- Ahmad Nasri, Fahad Bin Sultan University, Saudi Arabia
- Luciana Nedel, UFRGS, Brazil
- Junyong Noh, Korea Advanced Institute of Science and Technology, South Korea
- Victor Ostromoukhov, Université Claude Bernard Lyon 1, France
- Jinshan Pan, Nanjing University of Science and Technology, China
- George Papagiannakis, “University of Crete, Greece”, Greece
- Giuseppe Patanè, CNR-IMATI, Italy
- Xi Peng, A*STAR Singapore, Singapore
- Konrad Polthier, Freie Universität Berlin, Germany
- Nicolas Pronost, Université Claude Bernard Lyon 1, France
- Remi Ronfard, INRIA, France
- Robert Sablatnig, TU Wien, Austria
- Filip Sadlo, Heidelberg University, Germany
- Yusuf Sahillioglu, METU, Turkey
- Gerik Scheuermann, University of Leipzig, Germany
- Hyewon Seo, ICube – University of Strasbourg, France
- Tianjia Shao, Zhejiang University, China
- Ehud Sharlin, University of Calgary, Canada
- Bin Sheng, Shanghai Jiao Tong University, China
- Yun Sheng, Liverpool John Moores University, United Kingdom
- Gregory Slabaugh, Queen Mary University of London, United Kingdom
- Oh-Young Song, Sejong University, South Korea
- Alexei Sourin, Nanyang Technological University, Singapore
- Michela Spagnuolo, IMATI-CNR, Italy
- Constantine Stephanidis, ICS – FORTH, Greece
- Daniel Thalmann, Ecole Polytechnique Fédérale de Lausanne, Switzerland
- Zhigang Tu, Wuhan University, China
- Amir Vaxman, Utrecht University, Netherlands
- Anne Verroust-Blondet, INRIA, France
- Marcelo Walter, UFRGS, Brazil
- Charlie Wang, Delft University of Technology, Netherlands
- Huamin Wang, The Ohio State University, United States
- Keze Wang, Sun Yat-Sen University, China
- Wencheng Wang, Institute of Software, Chinese Academy of Sciences, China
- Franz-Erich Wolter, Leibniz University of Hannover, Germany
- Tien-Tsin Wong, The Chinese University of Hong Kong, Hong Kong
- Gang Wu, Alibaba Group, China
- Chunxia Xiao, Wuhan University, China
- Kun Xu, Tsinghua University, China
- Xiaosong Yang, Bournemouth University, United Kingdom
- Junfeng Yao, Software School of Xiamen University, China
- Yucel Yemez, Koc University, Turkey
- Zerrin Yumak, Utrecht University, Netherlands
- Pietro Zanuttigh, University of Padova, Italy
- Jian Zhang, Bournemouth University, United Kingdom
- Juyong Zhang, University of Science and Technology of China, China
- Kang Zhang, The University of Texas at Dallas, United States
- Jianmin Zheng, Nanyang Technological University, Singapore
- Wangmeng Zuo, Harbin Institute of Technology, China

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.