

Preface

The Computer Graphics International (CGI) conference, founded by the late Prof. Tosiyasu L. Kunii, a well-known computer scientist, in Tokyo in 1983, is an international mainstream academic conference in the field of computer graphics and virtual reality, and the flagship conference of the Computer Graphics Society (CGS). The CGI conference series holds a prestigious position among the longest-standing gatherings dedicated to computer graphics research and development. As a leading international forum, CGI attracts experts, researchers, and scholars from across the globe to showcase their latest advancements in the field. The primary objective of this conference is to foster cross-disciplinary collaboration, bridging the gaps between computer graphics, computer animation, gaming, special effects in film and television, three-dimensional visualization, medical imaging, and industrial applications. These areas have witnessed significant advancements in computer graphics technology, resulting in more realistic and immersive visual experiences. CGI's key topics of interest encompass computer graphics, virtual reality and the meta-universe, Geometric design and animation, AIGC and interactive entertainment, robotic vision, and healthcare.

As the 40th anniversary of the CGI conference approaches, CGI 2023 has landed in Shanghai, China, for the first time, spanning from August 28th to September 1st, 2023. It was jointly hosted by Shanghai Jiao Tong University, the University of Sydney, and the Institute of Software, Chinese Academy of Sciences. Professor Enhua Wu, and Professor David Dagan Feng, served as the Honorary Conference Co-chairs. Professor Bin Sheng from Shanghai Jiao Tong University, Professor Nadia Magnenat Thalmann from University of Geneva, and other distinguished professors served as Conference Co-Chairs. Professor Daniel Thalmann from EPFL, Dr. Stephen Lin from Microsoft Research Asia, Professor Lizhuang Ma, and Dr. Li Ping from the Hong Kong Polytechnic University served as the Program Co-chairs.

CGI 2023, centered on the theme of guiding industrial advancement through computer graphics and virtual reality, has garnered a prestigious gathering of 1067 academic experts, industrial engineers, and budding students from diverse backgrounds. Representing 26 nations and regions, including China, Japan, Russia, the United States, the United Kingdom, France, Germany, Israel, etc., they have come together to share their insights. With over 500 submissions, both in terms of quantity and quality, this year's conference has witnessed the highest standards in CGI's historical archive. CGI2023 champions the concept of "Translational Graphics", exploring a collaborative innovation model that bridges the gap between academia and real-world applications. It features discussions on cutting-edge topics such as computer graphics, virtual reality and the metaverse, geometric design and animation, AIGC and interactive entertainment, robotic vision and healthcare. Additionally, it hosted international youth technology competitions and multiple academic strategic forums, furthering the exchange and mutual learning ethos that the CGI conference has upheld since its inception. This continues to foster and support the growth and collaboration of young scholars in the field of computer graphics and virtual reality globally.

In the vast pool of over 500 submissions, five exceptional papers have been carefully chosen for inclusion in this esteemed special section. These papers exhibit a diverse range of topics, spanning from cutting-edge 3D generation techniques to innovative digital content creation, and even medical graphics and visualization. These five papers offer a comprehensive overview of the latest trends and advancements in computer graphics and virtual reality. They not only showcase the innovative work being done in these fields but also provoke important discussions about the ethical and social implications of computer graphics and virtual reality. This special section is a must-read for anyone interested in staying up-to-date with the latest developments in these exciting and rapidly evolving areas.

We hope that readers will enjoy this special section. We are grateful to all the paper authors and reviewers for their valuable contributions.

Guest Editors

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En-Hua Wu received his B.Sc. from Tsinghua University, in the Department of Computational Mathematics and Mechanics, followed by teaching in the Department of Computer Science and Technology until 1985. He received his Ph.D. degree from the Department of Computer Science, University of Manchester, U.K. in 1984. Since 1985, he has been with the State Key Laboratory of Computer Science, Institute of Software, Chinese Academy of Sciences, Beijing, as the Director of the Research Department of Fundamental Theory and Advanced Technology, until 2001. Since 1997, he has also been as a full professor with the University of Macau (UM), Macau, and an Emeritus Professor since 2012. He is an Associate-Editor-in-Chief of the Journal of Computer Science and Technology since 1995, and the Fellow of China Computer Federation (CCF). He received the honor of CHINAGRAPH Outstanding Award in 2002 and Contribution Award in 2020. His major interests are in computer graphics and virtual reality, physical simulation and fluid dynamics, image-based processing, and machine learning.



Bin Sheng completed his B.A. degree in English and B.Eng. Degree in computer science at Huazhong University of Science and Technology, Wuhan, in 2004, followed by an M.Sc. Degree in software engineering from the University of Macau, Macau, in 2007. He went on to earn his Ph.D. degree in computer science and engineering from The Chinese University of Hong Kong, Hong Kong, in 2011. Currently, he is a full Professor at the Department of Computer Science and Engineering at Shanghai Jiao Tong University, Shanghai. His research interests span a range of disciplines, including virtual reality, machine learning, and medical data analysis. His work has been published in prestigious journals such as Nature Medicine, Nature Communications, IEEE TPAMI, TVCG, TIP, and IJCV. Professor Sheng is serving as the Managing Editor of The Visual Computer and a member of the Editorial Board for IEEE TSCVT, The Visual Computer, IET Image Processing, and Journal of Virtual Reality and Intelligent Hardware. He has organized several conferences and challenges, including serving as Program Co-Chair for Computer Graphics International (2020–2022), Conference Co-Chair for Computer Graphics International (2023–2024) and CASA 2024, and AI Challenge Co-Chair for DeepDRiD (ISBI 2020), DRAC (MICCAI 2022), and MMAC (MICCAI 2023). In recognition of his outstanding contributions, Professor Sheng was awarded the Outstanding Contribution Award by the Computer Graphics Society in 2023.