Preface

The International Conference on Computer-Aided Design and Computer Graphics (CAD/Graphics) is a biannual international conference since 1989, which is affiliated with the Chinese Computer Federation (CCF). The conference is intended to provide an ideal forum for international researchers and developers to exchange new ideas on computer-aided design and computer graphics, electronic design automation, and visualization, to explore new ideas and trends.

The main topics of interest to CAD/Graphics encompass the traditional graphics techniques (geometric modeling and geometry processing, animation, image and video processing, graphics hardware, visualization, image-based modeling and rendering, computational photography, etc.), CAD/CAE/CAM, computer vision, computer human interface, virtual reality and augmented reality, and recent application of graphics techniques to robotics, fabrication, driverless cars, among others.

The CAD/Graphics 2017 conference, which is the 15th international conference in the series, attracted broad attention from researchers worldwide. A total of 196 technical papers were submitted and double-blindly reviewed by an international program committee comprising 138 experts. A total of 60 papers (31% acceptance rate) were accepted as full papers with oral presentation, out of which 11 outstanding papers (including one Best Paper Award winner) were selected and recommended to be considered by the Journal of Computer Science and Technology (JCST). The selection was based on both the review scores and the presentation quality during the conference. Among the 11 papers, eight are included in this special section and the other three will be published later as regular papers.

The paper "ExquiMo: An Exquisite Corpse Tool for Collaborative 3D Shape Design" presents a collaborative modeling tool which allows novice users to work together to generate interesting, and even creative, 3D shapes. The technique is inspired by an Exquisite Corpse gameplay and allocates distinct parts of a shape to multiple players. This paper won the Best Paper Award of CAD/Graphics 2017.

In paper "Estimation of Vehicle Pose and Position with Monocular Camera at Urban Road Intersections", a method for pose and position estimation of vehicles based on the road sign is proposed. The estimation relies only on a monocular camera and a common GPS.

The problem of mechanical assembly packing is studied in paper "Mechanical Assembly Packing Problem Using Joint Constraints". A joint-aware solution space is constructed and searched over for the NP-hard problem.

In "Non-Frontal Facial Expression Recognition Using a Depth-Patch Based Deep Neural Network", a novel deep architecture is proposed for the problem of pose-invariant facial expression recognition.

The paper "Surface Tension Model Based on Implicit Incompressible Smoothed Particle Hydrodynamics for Fluid Simulation" presents a steady and fast tension model with the effect of molecular cohesion and surface minimization.

We also have three papers with strong medical applications. They are about surgical cutting simulation ("Stable Real-Time Surgical Cutting Simulation of Deformable Objects Embedded with Arbitrary Triangular Meshes"), surface depth measurement of anterior lamina cribrosa ("Automatic Anterior Lamina Cribrosa Surface Depth Measurement Based on Active Contour and Energy Constraint"), and vessel classification ("Supervised Vessels Classification Based on Feature Selection").

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

Guest Editors:

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Li-Gang Liu is a professor at the School of Mathematical Sciences, University of Science and Technology of China, Hefei. He received his B.S. (1996) and his Ph.D. (2001) degrees in applied mathematics from Zhejiang University, Hangzhou. Between 2001 and 2004, he worked at Microsoft Research Asia, Beijing. Then he worked at Zhejiang University, Hangzhou, during 2004~2012. He paid an academic visit to Harvard University during 2009~2011. His research interests include digital geometric processing, computer graphics, and image processing. He serves as the associated editors for journals of IEEE Transactions on Visualization and Computer Graphics, IEEE Computer Graphics and Applications, Computer Graphics Forum, Computer Aided Geometric Design, Computers & Graphics, and The Visual Computer. He served as the conference co-chair of GMP 2017 and the program co-chairs of GMP 2018, CAD/Graphics 2017, CVM 2016, SGP 2015, and SPM 2014. His research work could be found at his research website: http://staff.ustc.edu.cn/~lgliu.

Kai Xu is an associate professor at the School of Computer, National University of Defense Technology, Changsha, where he received his Ph.D. degree in computer science in 2011. From 2008 to 2010, he conducted visiting research at Simon Fraser University, Burnaby. He is visiting Princeton University, Princeton, since July 2017. His research interests include geometry processing and geometric modeling, especially on data-driven approaches to the problems in those directions and 3D-gemoetry-based computer vision for robotic applications. He has published over 60 research papers, including 16 SIGGRAPH/TOG papers. He organized two SIGGRAPH Asia courses and one Eurographics STAR tutorial. He is currently serving on the editorial board of Computer Graphics Forum, Computers & Graphics, and The Visual Computer. He also served as paper co-chair of CAD/Graphics 2017 and ICVRV 2017, as well as PC member for several prestigious conferences including SIGGRAPH Asia, SGP, PG, GMP, etc. His research work can be found in his personal website: www.kevinkaixu.net.