

The 23rd Pacific Conference on Computer Graphics and Applications



Tsinghua University, Beijing  
October 7 – 9, 2015

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## **Preface**

The 23rd Pacific Conference on Computer Graphics and Applications (Pacific Graphics 2015) was held in Beijing, China, on October 7-9, 2015. As a highly successful conference series, Pacific Graphics provides a premium forum for researchers, developers, practitioners in the Pacific Rim and around the world to present and discuss new problems, solutions, and technologies in computer graphics and related areas.

There were 157 papers submitted, which were reviewed by a program committee of 115 international experts, as well as 179 external reviewers. Of these submissions, 33 papers were selected for full oral presentation at the conference, as well as for inclusion in this issue of Computer Graphics Forum. Each paper was reviewed by at least 4 reviewers from the program committee and the external experts. Each of the accepted papers underwent a second review cycle to ensure that the necessary revisions indicated in the reviews were carried out.

In addition to the paper presentation, the conference also featured three invited talks by Peter Wonka, Nobuyuki Umetani, and Kun Zhou. There was also a short paper session, where 14 short papers were presented. The short papers are published electronically through the EG Digital Library.

The topics of the papers in this volume are diverse, including geometric modeling, rendering, animation, simulation, images/videos, and visualization. Some of the papers were submitted with supplementary materials that EUROGRAPHICS members can access through the EG website.

We would like to thank the authors and participants at the conference, the program committee members, and the external reviewers, all of whom made their best effort to ensure the high quality of the Pacific Graphics 2015 technical program. We also wish to thank Tsinghua-Tencent Internet Innovation Technology Joint Laboratory for their financial support. Finally, we would like to thank Stefanie Behnke, whose administrative and technical help was invaluable.

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Mi, Haipeng  
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Su, Zhixun  
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Tong, Weihua  
Trutoiu, Laura  
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Vouga, Etienne  
Wan, Yong  
Wand, Michael  
Wang, Baoyuan  
Wang, Dangxiao  
Wang, He  
Wang, Jindong  
Wang, Miao  
Wang, Oliver  
Wang, Rui  
Wang, Yan  
Wang, Yunhai  
Wang, Yuxiang  
Way, Der-Lor  
Wilkie, David  
Wong, Sai-Keung  
Wu, Baoyuan  
Wu, Chunlin  
Wu, Hsiang-Yun  
Wu, Shihao  
Xia, Jun  
Xiao, Chunxia  
Xie, Jinrong  
Xin, Jin  
Xing, Jun  
Xu, Feng  
XU, Weiwei  
Xu, Xuemiao  
Xue, Su  
Yan, Feilong  
Yan, Ling-Qi  
Yang, Baoguang  
Yang, Yin  
Ye, Jinwei  
Yoon, Seung-Hyun  
Yue, Yonghao  
Zhang, Chenxi  
Zhang, Fang-Lue  
Zhang, Guofeng  
Zhang, Juyong  
Zhang, Lei  
Zhang, Min  
Zhang, Song-Hai  
Zhang, Yubo  
Zhang, Yue  
Zhang, Yun  
Zhao, Shuang  
Zhao, Ye  
Zhao, Yili  
Zheng, Qian  
Zheng, Youyi  
Zhong, Zichun  
Zhou, Qianyi  
Zhou, Qingnan  
Zhou, Shizhe  
Zhou, Zihan  
Zhu, Bo  
Zhuang, Yixin  
Zimmer, Henrik



## Author Index

Andreadis Anthousis . . . . .	13	Jarosz Wojciech . . . . .	329	Shechtman Eli . . . . .	257
Asente Paul . . . . .	257	Jian Xiao-Feng . . . . .	235	Sheng Kekai . . . . .	213
Babanin Andrey . . . . .	67	Jin Lianwen . . . . .	203	Shen I-Chao . . . . .	235
Bang Seungbae . . . . .	123	Jin Xiaogang . . . . .	269	Shen Zhongwei . . . . .	145
Bao Hujun . . . . .	57, 145, 269	Kim Meekyoung . . . . .	123	Shum Hubert P. H. . . . .	99
Barnes Connelly . . . . .	77	Kong Yan . . . . .	213	Sipiran Ivan . . . . .	13
Biri Venceslas . . . . .	299	Kuo Ming-Hsun . . . . .	339	Sun Hanqiu . . . . .	133
Blelloch Guy E. . . . .	309	Lawrence Jason . . . . .	77	Sýkora Daniel . . . . .	257
Bouaziz Sofien . . . . .	23	Lee Ruen-Rone . . . . .	225, 339	Tang Min . . . . .	289
Cai Yiyu . . . . .	35	Lee Sung-Hee . . . . .	123	Tao Yubo . . . . .	163
Casas Dan . . . . .	173	Liang Lingyu . . . . .	203	Theobalt Christian . . . . .	173
Chai Jinxiang . . . . .	111	Lin Tse-Ju . . . . .	235	Tokuyoshi Yusuke . . . . .	89
Chan Antoni B. . . . .	245	Lin You-En . . . . .	339	Tong Ruofeng . . . . .	289
Cheng Ming-Ming . . . . .	193	Liu Le . . . . .	279	Torr Philip H. S. . . . .	193
Chen Bing-Yu . . . . .	235	Liu Ligang . . . . .	1, 23	Wang Chengjie . . . . .	213
Chen Guoning . . . . .	163	Liu Xuehui . . . . .	279	Wang Guoping . . . . .	133
Chen Hsin-I . . . . .	235	Li Hua . . . . .	319	Wang Pengjie . . . . .	111
Chen Wei . . . . .	145, 163	Li Jilin . . . . .	213	Wang Rui . . . . .	57
Chen Yanyun . . . . .	279	Li Sheng . . . . .	133	Wang Zhendong . . . . .	289
Chiu Chun-Chia . . . . .	225	Li Siwang . . . . .	269	Weimer Westley . . . . .	77
Choi Byungkuk . . . . .	123	Li Xiaosheng . . . . .	279	Wu Enhua . . . . .	279
Chu Hung-Kuo . . . . .	225, 339	Lo Yi-Hsiang . . . . .	225	Wu Feiran . . . . .	163
Collomosse John . . . . .	173	Lukáč Michal . . . . .	257	Wu Xiaoqun . . . . .	35
Deng Bailin . . . . .	23	Lu Jingwan . . . . .	257	Xie Zhige . . . . .	1
Dong Weiming . . . . .	213	Lv Pei . . . . .	111	Xiong Yueshan . . . . .	1
Dorn Jonathan . . . . .	77	Manocha Dinesh . . . . .	133, 289	Xu Chao . . . . .	57
Fišer Jakub . . . . .	257	Mavridis Pavlos . . . . .	13	Xu Kai . . . . .	1
Froehlich Bernd . . . . .	67	Mei Xing . . . . .	213	Xu Ling . . . . .	47
Fujisawa Makoto . . . . .	155	Miura Kenjiro T. . . . .	155	Xu Mingliang . . . . .	111
Fu Chi-Wing . . . . .	35	Morishima Shigeo . . . . .	99	Xu Weiwei . . . . .	111
Fu Hongbo . . . . .	245	Mould David . . . . .	47, 319	Xu Yong . . . . .	203
Gross Markus . . . . .	329	Noh Junyong . . . . .	123	Yang Longzhi . . . . .	99
Gu Yan . . . . .	309	Noël Laurent . . . . .	299	Yang Yong-Liang . . . . .	339
Habel Ralf . . . . .	329	Pan Zherong . . . . .	269	Zhang Jian J. . . . .	279
He Yong . . . . .	309	Pan Zhigeng . . . . .	111	Zhang Juyong . . . . .	23
Hilton Adrian . . . . .	173	Papaioannou Georgios . . . . .	13	Zhang Lei . . . . .	183
Hostettler Rafael . . . . .	329	Phan Huy Quoc . . . . .	245	Zhang Mingmin . . . . .	111
Huang Feiyue . . . . .	213	Prisacariu Victor Adrian . . . . .	193	Zhang Tianxiang . . . . .	133
Huang Hua . . . . .	183	Ribera Roger Blancoi . . . . .	123	Zhang Wangyu . . . . .	23
Huang Hui . . . . .	1	Richardt Christian . . . . .	173	Zhang Xin . . . . .	203
Huang Jin . . . . .	145, 163, 269	Rother Carsten . . . . .	193	Zhang Yu-Hang . . . . .	183
Hu Bao-Gang . . . . .	213	Schollmeyer Andre . . . . .	67	Zheng Jianmin . . . . .	35
Iwamoto Naoya . . . . .	99	Shan Wen . . . . .	1	Zheng Shuai . . . . .	193

## TABLE OF CONTENTS

### Shape and Mesh

<i>Projective Feature Learning for 3D Shapes with Multi-View Depth Images</i>	1
Zhige Xie, Kai Xu, Wen Shan, Ligang Liu, Yueshan Xiong, and Hui Huang	
<i>Object Completion using <math>k</math>-Sparse Optimization</i>	13
Pavlos Mavridis, Ivan Sipiran, Anthousis Andreadis, and Georgios Papaioannou	
<i>Guided Mesh Normal Filtering</i>	23
Wangyu Zhang, Bailin Deng, Juyong Zhang, Sofien Bouaziz, and Ligang Liu	
<i>Mesh Denoising using Extended ROF Model with <math>L_1</math> Fidelity</i>	35
Xiaoqun Wu, Jianmin Zheng, Yiyu Cai, and Chi-Wing Fu	
<i>Procedural Tree Modeling with Guiding Vectors</i>	47
Ling Xu and David Mould	

### Rendering

<i>Realtime Rendering Glossy to Glossy Reflections in Screen Space</i>	57
Chao Xu, Rui Wang, and Hujun Bao	
<i>Order-Independent Transparency for Programmable Deferred Shading Pipelines</i>	67
Andre Schollmeyer, Audrey Babanin, and Bernd Froehlich	
<i>Towards Automatic Band-Limited Procedural Shaders</i>	77
Jonathan Dorn, Connelly Barnes, Jason Lawrence, and Westley Weimer	
<i>Virtual Spherical Gaussian Lights for Real-time Glossy Indirect Illumination</i>	89
Yusuke Tokuyoshi	

### Characters

<i>Multi-layer Lattice Model for Real-Time Dynamic Character Deformation</i>	99
Naoya Iwamoto, Hubert P. H. Shum, Longzhi Yang, and Shigeo Morishima	
<i>A Suggestive Interface for Sketch-based Character Posing</i>	111
Pei Lv, Pengjie Wang, Weiwei Xu, Jinxiang Chai, Mingmin Zhang, Zhigeng Pan, and Mingliang Xu	
<i>Interactive Rigging with Intuitive Tools</i>	123
Seungbae Bang, Byungkuk Choi, Roger Blanco i Ribera, Meekyoung Kim, Sung-Hee Lee, and Junyong Noh	

### Simulation and Visualization

<i>Quadratic Contact Energy Model for Multi-impact Simulation</i>	133
Tianxiang Zhang, Sheng Li, Dinesh Manocha, Guoping Wang, and Hanqiu Sun	
<i>Geometrically Exact Simulation of Inextensible Ribbon</i>	145
Zhongwei Shen, Jin Huang, Wei Chen, and Hujun Bao	
<i>An Efficient Boundary Handling with a Modified Density Calculation for SPH</i>	155
Makoto Fujisawa and Kenjiro T. Miura	
<i>EasyXplorer: A Flexible Visual Exploration Approach for Multivariate Spatial Data</i>	163
Feiran Wu, Guoning Chen, Jin Huang, Yubo Tao, and Wei Chen	

## TABLE OF CONTENTS

### Image and Video

- 4D Model Flow: Precomputed Appearance Alignment for Real-time 4D Video Interpolation* 173  
Dan Casas, Christian Richardt, John Collomosse, Christian Theobalt, and Adrian Hilton
- Efficient Variational Light Field View Synthesis For Making Stereoscopic 3D Images* 183  
Lei Zhang, Yu-Hang Zhang, and Hua Huang
- DenseCut: Densely Connected CRFs for Realtime GrabCut* 193  
Ming-Ming Cheng, Victor Adrian Prisacariu, Shuai Zheng, Philip H. S. Torr, and Carsten Rother
- Multiple Facial Image Editing Using Edge-Aware PDE Learning* 203  
Lingyu Liang, Lianwen Jin, Xin Zhang, and Yong Xu
- Evaluating the Quality of Face Alignment without Ground Truth* 213  
Kekai Sheng, Weiming Dong, Yan Kong, Xing Mei, Jilin Li, Chengjie Wang, Feiyue Huang, and Bao-Gang Hu

### Drawing and Painting

- Tone- and Feature-Aware Circular Scribble Art* 225  
Chun-Chia Chiu, Yi-Hsiang Lo, Ruen-Rone Lee, and Hung-Kuo Chu
- Data-driven Handwriting Synthesis in a Conjoined Manner* 235  
Hsin-I Chen, Tse-Ju Lin, Xiao-Feng Jian, I-Chao Shen, Bing-Yu Chen
- FlexyFont: Learning Transferring Rules for Flexible Typeface Synthesis* 245  
Huy Quoc Phan, Hongbo Fu, and Antoni B. Chan
- Brushables: Example-based Edge-aware Directional Texture Painting* 257  
Michal Lukáč, Jakub Fišer, Paul Asente, Jingwan Lu, Eli Shechtman, and Daniel Šýkora

### Collision Detection

- Deformable Objects Collision Handling with Fast Convergence* 269  
Siwang Li, Zherong Pan, Jin Huang, Hujun Bao, and Xiaogang Jin
- An Efficient Feathering System with Collision Control* 279  
Le Liu, Xiaosheng Li, Yanyun Chen, Xuehui Liu, Jian J. Zhang, and Enhua Wu
- TightCCD: Efficient and Robust Continuous Collision Detection using Tight Error Bounds* 289  
Zhendong Wang, Min Tang, Ruofeng Tong, and Dinesh Manocha

### Ray Tracing

- Skeleton based Vertex Connection Resampling for Bidirectional Path Tracing* 299  
Laurent Noël and Venceslas Biri
- Ray Specialized Contraction on Bounding Volume Hierarchies* 309  
Yan Gu, Yong He, and Guy E. Blelloch

## TABLE OF CONTENTS

### Stylization

<i>Contrast-Enhanced Black and White Images</i>	319
Hua Li and David Mould	
<i>Dispersion-based Color Projection using Masked Prisms</i>	329
Rafael Hostettler, Ralf Habel, Markus Gross, and Wojciech Jarosz	
PIXEL2BRICK: <i>Constructing Brick Sculptures from Pixel Art</i>	339
Ming-Hsun Kuo, You-En Lin, Hung-Kuo Chu, Ruen-Rone Lee, and Yong-Liang Yang	

## Invited Talk

### Computational Design of Urban Layouts

*Peter Wonka*

Professor of Computer Science at King Abdullah University of Science and Technology (KAUST) and Arizona State University

#### **Abstract**

A fundamental challenge in computational design is to compute layouts by arranging a set of shapes. In this talk I will present recent urban modeling projects with applications in computer graphics, urban planning, and architecture. The talk will look at different scales of urban modeling (streets, floorplans, parcels). A common challenge in all these modeling problems are functional and aesthetic constraints that should be respected. The talk also highlights interesting links to geometry processing problems, such as field design and quad meshing.

## Invited Talk

### Simulation-guided Interactive Exploration of Functional Design

*Nobuyuki Umetani*

Research Scientist at Autodesk Research

#### **Abstract**

Physical simulation allows validation of geometric designs without tedious physical prototyping. However, since geometric modeling and physical simulation are typically separated, simulations are mainly used for rejecting bad design, and not for assisting creative exploration towards better designs. In this talk, I introduce several interactive approaches to integrate physical simulation into geometric modeling to actively support creative design process. Importance of interactivity in the design system will be discussed in various practical contexts including structurally robust design, musical instrument design, garment design, and aerodynamics design.

## Invited Talk

### Digital Avatars for All: Interactive Face and Hairs

*Kun Zhou*

Cheung Kong Professor and Director of the State Key Lab of  
CAD&CG at Zhejiang University

#### **Abstract**

Although realistic face/hair modeling and animation technologies have been widely employed in computer generated movies, it remains challenging to deploy them in consumer-level applications such as computer games, social networks and other interactive applications. The main difficulties come from the requirement of special equipment, sensitivity to daily environments, laborious manual work and high computational costs. In this talk, I will introduce our recent work on realistic face/hair modeling and animation, targeting at interactive applications and ordinary users. In particular, I will describe fully automatic approaches to real-time facial tracking and animation with a single web camera, methods for modeling hairs from images, and real-time algorithms for realistic hair simulation.