CGI 2017 Editorial (TV CJ)

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Welcome to the special issue of the 34th Computer Graphics International conference (CGI'17)! Computer Graphics International is one of the oldest true international conferences in computer graphics. It is the official conference of the Computer Graphics Society (CGS), a long-standing international computer graphics organization. CGI and CGS were initiated in Tokyo by Professor Toshiyasu L. Kunii from the University of Tokyo in 1983. Since then, the CGI conference has been held annually in many different countries across the world and gained a reputation as one of the key conferences for researchers and practitioners to share their achievements and discover the latest advances in this field. CGI this year has been organized by Faculty of Science and Technology, Keio University in Yokohama, Japan, between 27th and 30th June, 2017, with support from CGS and in cooperation with ACM/SIGGRAPH and Eurographics.

This special issue of the Visual Computer is composed of the 35 best papers from CGI'17. We received 171 submissions from 33 countries and regions, making the acceptance ratio about 20%. To ensure the highest quality of publications, each paper has been reviewed by at least three experts in the field. The International Program Committee is com-

posed of 92 members plus 112 external sub-reviewers invited by the IPC.

1 Articles in this special issue

The selected 35 papers are organized in the following nine sessions, covering the fundamentals as well as the most advanced research topics in computer graphics.

Rendering: The first session consists of three papers on the state-of-the-art rendering methods. H. Yuan and C. Zheng propose an adaptive method for denoising images rendered with Monte Carlo ray tracing. J. Whittle et al. show how to evaluate an image generated by a global illumination method, with reference to selected candidate metrics that could be used to compare a computer generated image with a ground truth image. Q. Zheng and C. Zheng propose a polynomial regression-based approach for designing a polynomial lens model for synthetic images.

Image and texture: The first three papers of this session focus on image processing. The paper by H. Hristova et al. proposes a technique for recovering HDR images from flash and non-flash image pairs. J. Jung et al. present a method to correct the upright alignment of a spherical panorama image captured with a consumer-level 360 degree camera. H. Liu et al. propose a pipeline to generate high-speed videos by combining an event stream from an event camera and several images from a conventional camera. The remaining two papers address texture generation and filtering. H. Kang and J. Han present a texture-synthesizing algorithm by decomposing the input texture into feature and non-feature parts. C. Liu et al. propose a novel method for smoothing the multi-scale texture with strong gradient while maintaining the weak structure.

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Deformation and compression: This session includes four papers, the first two of which focus on deformation and the others on the compression of animated 3D objects. The paper by D. Yu and T. Kanai aims to enrich the subspace elastic deformation by accounting for local collisions. L. Lan et al. present a medial-axis-driven skin surface deformation algorithm with volume preservation property. J. Chen et al. propose a mesh compression method specialized for cloth animation by taking advantage of the inextensibility of cloth. The paper by A. S. Lalos et al. introduces an interesting approach based on PCA to tackle a difficult problem of supporting fast and efficient lossy compression of arbitrary animation sequences.

Noise and sampling: This session consists of four papers on sampling and denoising. K. Wong and T. Wong present a physically based blue noise sampling method using the N-body simulation. D. Cornel et al. propose a new sampling method based on forced random dithering. M. Sbert and V. Harran present a mathematical expression for the optimal distribution of samples in multiple importance sampling. Y. Zheng et al. propose an approach for feature preserving filtering of noisy point clouds.

Surface: This session includes four papers on surface generation and registration. The first paper by P. Hermosilla et al. proposes an efficient level-of-detail technique to improve the performance of generating and visualizing molecular surfaces. The second paper by L. Liu et al. describes a collision-free system for constructing feather on animated 3D objects. The third paper by Jiang proposes a surface registration method based on a consistent as-similar-as-possible energy, addressing the problem of mesh distortion and fold-over during transformation. R. Li et al. propose a heuristic measure to convexity, which is a crucial measure of shape properties and plays a fundamental role in shape decomposition, classification and retrieval.

Modeling: This session consists of four papers, each of which aims at exploring a new means of graphical modeling. S. Lu et al. extend 2D marbling techniques to 3D space and use them to introduce space deformation tools for creating artistic 3D models. S. Zhang et al. present a method for enhancing indoor scenes by changing colors of furniture items and adding small objects so that the atmosphere of the scenes matches the user specified guide words. M. Hu et al. describe an algorithm of the distance evaluation from the given point on a 2D plane to an implicit curve. W. Wang et al. propose a method to create light weight 3D models that meet the fabrication requirements, including structural strength and static stability.

Character animation: The four papers in this session define characteristics of character animation as a representative ‘old

and new’ problem in computer graphics. P. Hu et al. present a novel pipeline for animating characters dressed in multiple layers of cloth captured by 3D scanners. Y. Wang et al. introduce a recurrent neural network for synthesizing motions of interacting virtual characters. J. Chi et al. propose an example based facial expression editing method that is intuitive to users and resistant to unrealistic user constraints. S. Xia et al. devise a technique to label markers from live motion-captured data based on the principle of graph matching.

Natural things: There still exist many intricate things around us to be feasibly simulated, and the four papers in this session are a good collection of the latest challenges. O. Argudo et al. and S. Hu et al. present techniques for synthesizing terrain using multiple terrain layers and for modeling animated trees, respectively. T. Kim et al. attempt to add fire flakes/sparks to flames given temperature and velocity fields generated by simulation. J. Wilson et al. show a revised sound synthesis pipeline to mimic the sounds produced from a container with liquid inside.

Visual exploration: The three papers in this last session intend to address visual exploration issues in terms of image retrieval, image segmentation and visualization. J. Cho et al. propose a novel method to retrieve images, which enables a region-based similarity measurement by rank-based TF-IDF-like mechanism. L. Bi et al. present a novel approach for medical image segmentation with fully convolutional networks, which produces refined segmentation results without applying graphical models or user interaction. Y. Chen et al. present ordered small multiple treemaps as a visualization technique to explore and analyze time-varying hierarchical data.

2 International program committee

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