1, TITLE: Hierarchical neural reconstruction for path guiding using hybrid path and photon samples
https://dl.acm.org/doi/abs/10.1145/3450626.3459810
AUTHORS: Shilin Zhu, Zexiang Xu, Tiancheng Sun, Alexandr Kuznetsov, Mark Meyer, Henrik Wann Jensen, Hao Su, Ravi Ramamoorthi
HIGHLIGHT: In this paper, we accelerate the learning of sampling distributions by training a light-weight neural network offline to reconstruct from sparse samples.

2, TITLE: Real-time neural radiance caching for path tracing
https://dl.acm.org/doi/abs/10.1145/3450626.3459812
AUTHORS: Thomas Müller, Fabrice Rousselle, Jan Novák, Alexander Keller
HIGHLIGHT: We present a real-time neural radiance caching method for path-traced global illumination.

3, TITLE: Interactive Monte Carlo denoising using affinity of neural features
https://dl.acm.org/doi/abs/10.1145/3450626.3459793
AUTHORS: Mustafa I?ik, Krishna Mullia, Matthew Fisher, Jonathan Eisenmann, Michaël Gharbi
HIGHLIGHT: We present a new learning-based denoiser that achieves state-of-the-art quality and runs at interactive rates.

4, TITLE: Weakly-supervised contrastive learning in path manifold for Monte Carlo image reconstruction
https://dl.acm.org/doi/abs/10.1145/3450626.3459876
AUTHORS: In-Young Cho, Yuchi Huo, Sung-Eui Yoon
HIGHLIGHT: This paper introduces a contrastive manifold learning framework to utilize path-space features effectively.

5, TITLE: Bistable auxetic surface structures
https://dl.acm.org/doi/abs/10.1145/3450626.3459940
AUTHORS: Tian Chen, Julian Panetta, Max Schnaubelt, Mark Pauly
HIGHLIGHT: We introduce a computational solution for the inverse design of our Bistable Auxetic Surface Structures.

6, TITLE: Computational inverse design of surface-based inflatables
https://dl.acm.org/doi/abs/10.1145/3450626.3459789
AUTHORS: Julian Panetta, Florin Isvoranu, Tian Chen, Emmanuel Siéfert, Benoît Roman, Mark Pauly
HIGHLIGHT: We present a computational inverse design method for a new class of surface-based inflatable structure.

7, TITLE: Modeling and fabrication with specified discrete equivalence classes
https://dl.acm.org/doi/abs/10.1145/3450626.3459843
AUTHORS: Zhong-Yuan Liu, Zhan Zhang, Di Zhang, Chunyang Ye, Ligang Liu, Xiao-Ming Fu
HIGHLIGHT: We propose a novel method to model and fabricate shapes using a small set of specified discrete equivalence classes of triangles.

8, TITLE: Using isometries for computational design and fabrication
https://dl.acm.org/doi/abs/10.1145/3450626.3459839
AUTHORS: Caigui Jiang, Hui Wang, Victor Ceballos Inza, Felix Dellinger, Florian Rist, Johannes Wallner, Helmut Pottmann
HIGHLIGHT: We solve the task of representing free forms by an arrangement of panels that are manufacturable by precise isometric bending of surfaces made from a small number of molds.

9, TITLE: Total relighting: learning to relight portraits for background replacement
https://dl.acm.org/doi/abs/10.1145/3450626.3459872
AUTHORS: Rohit Pandey, Sergio Orts Escolano, Chloe Legendre, Christian Häne, Sofien Bouaziz, Christoph Rhemann, Paul Debevec, Sean Fanello
HIGHLIGHT: We propose a novel system for portrait relighting and background replacement, which maintains high-frequency boundary details and accurately synthesizes the subject's appearance as lit by novel illumination, thereby producing realistic composite images for any desired scene.

10, TITLE: PhotoApp: photorealistic appearance editing of head portraits
https://dl.acm.org/doi/abs/10.1145/3450626.3459765
AUTHORS: Mallikarjun B R, Ayush Tewari, Abdallah Dib, Tim Weyrich, Bernd Bickel, Hans-Peter Seidel, Hanspeter Pfister, Wojciech Matusik, Louis Chevallier, Mohamed Elgharib, Christian Theobalt
HIGHLIGHT: We present an approach for high-quality intuitive editing of the camera viewpoint and scene illumination (parameterised with an environment map) in a portrait image.

11, TITLE: Only a matter of style: age transformation using a style-based regression model
https://dl.acm.org/doi/abs/10.1145/3450626.3459805
AUTHORS: Yuval Alaluf, Or Patashnik, Daniel Cohen-Or
HIGHLIGHT: In this work, we present an image-to-image translation method that learns to directly encode real facial images into the latent space of a pre-trained unconditional GAN (e.g., StyleGAN) subject to a given aging shift.

12, TITLE: Coarse-to-fine: facial structure editing of portrait images via latent space classifications
https://dl.acm.org/doi/abs/10.1145/3450626.3459814
AUTHORS: Yiqian Wu, Yong-Liang Yang, Qinjie Xiao, Xiaogang Jin
HIGHLIGHT: In this paper, we investigate how to perform chin editing as a case study of editing facial structures.

13, TITLE: A perceptual model for eccentricity-dependent spatio-temporal flicker fusion and its applications to foveated graphics
https://dl.acm.org/doi/abs/10.1145/3450626.3459784
AUTHORS: Brooke Krajancich, Petr Kellnhofer, Gordon Wetzstein
HIGHLIGHT: We introduce a new model, experimentally measuring and computationally fitting eccentricity-dependent critical flicker fusion thresholds jointly for both space and time.

14, TITLE: Beyond blur: real-time ventral metamers for foveated rendering
https://dl.acm.org/doi/abs/10.1145/3450626.3459943
AUTHORS: David R. Walton, Rafael Kuffner Dos Anjos, Sebastian Friston, David Swapp, Kaan Ak?it, Anthony Steed, Tobias Ritschel
HIGHLIGHT: We propose a real-time method to compute such ventral metamers for foveated rendering where, in particular for near-eye displays, the largest part of the framebuffer maps to the periphery.

15, TITLE: FovVideoVDP: a visible difference predictor for wide field-of-view video
https://dl.acm.org/doi/abs/10.1145/3450626.3459831
AUTHORS: Rafa? K. Mantiuk, Gyorgy Denes, Alexandre Chapiro, Anton Kaplanyan, Gizem Rufo, Romain Bachy, Trisha Lian, Anjul Patney
HIGHLIGHT: FovVideoVDP is a video difference metric that models the spatial, temporal, and peripheral aspects of perception. While many other metrics are available, our work provides the first practical treatment of these three central aspects of vision simultaneously.

16, TITLE: StrokeStrip: joint parameterization and fitting of stroke clusters
https://dl.acm.org/doi/abs/10.1145/3450626.3459777
AUTHORS: Dave Pagurek Van Mossel, Chenxi Liu, Nicholas Vining, Mikhail Bessmeltsev, Alla Sheffer
HIGHLIGHT: We present StrokeStrip, a new and robust method for fitting intended curves to vector-format stroke clusters.

17, TITLE: General virtual sketching framework for vector line art
https://dl.acm.org/doi/abs/10.1145/3450626.3459833
AUTHORS: Haoran Mo, Edgar Simo-Serra, Chengying Gao, Changqing Zou, Ruomei Wang
HIGHLIGHT: We introduce a general framework to produce line drawings from a wide variety of images, by learning a mapping from raster image space to vector image space.

18, TITLE: Tracing versus freehand for evaluating computer-generated drawings
https://dl.acm.org/doi/abs/10.1145/3450626.3459819
AUTHORS: Zeyu Wang, Sherry Qiu, Nicole Feng, Holly Rushmeier, Leonard McMillan, Julie Dorsey
HIGHLIGHT: In this paper, we compare tracing, freehand drawing, and computer-generated drawing approximation (CGDA) to understand their similarities and differences.

19, TITLE: Boundary-sampled halfspaces: a new representation for constructive solid modeling
https://dl.acm.org/doi/abs/10.1145/3450626.3459870
AUTHORS: Xingyi Du, Qingnan Zhou, Nathan Carr, Tao Ju
HIGHLIGHT: We present a novel representation of solid models for shape design.

20, TITLE: Fusion 360 gallery: a dataset and environment for programmatic CAD construction from human design sequences
https://dl.acm.org/doi/abs/10.1145/3450626.3459818
AUTHORS: Karl D. D. Willis, Yewen Pu, Jieliang Luo, Hang Chu, Tao Du, Joseph G. Lambourne, Armando Solar-Lezama, Wojciech Matusik

HIGHLIGHT: In this paper we present the Fusion 360 Gallery, consisting of a simple language with just the sketch and extrude modeling operations, and a dataset of 8,625 human design sequences expressed in this language.

21, TITLE: Swept volumes via spacetime numerical continuation
https://dl.acm.org/doi/abs/10.1145/3450626.3459780
AUTHORS: Silvia Sellán, Noam Aigerman, Alec Jacobson
HIGHLIGHT: Given a solid 3D shape and a trajectory of it over time, we compute its swept volume - the union of all points contained within the shape at some moment in time.

22, TITLE: ROSEFusion: random optimization for online dense reconstruction under fast camera motion
https://dl.acm.org/doi/abs/10.1145/3450626.3459676
AUTHORS: Jiazhao Zhang, Chenyang Zhu, Lintao Zheng, Kai Xu
HIGHLIGHT: We propose to tackle the difficulties of fast-motion camera tracking in the absence of inertial measurements using random optimization, in particular, the Particle Filter Optimization (PFO).

23, TITLE: Neural complex luminaires: representation and rendering
https://dl.acm.org/doi/abs/10.1145/3450626.3459798
AUTHORS: Junqiu Zhu, Yaoyi Bai, Zilin Xu, Steve Bako, Edgar Velázquez-Armendáriz, Lu Wang, Pradeep Sen, MiloÅ¡ HaÅ¡an, Ling-Qi Yan
HIGHLIGHT: Inspired by the success of deep networks, which can model complex relationships robustly and be evaluated efficiently, we propose to use a machine learning framework to compress a complex luminaire's lightfield into an implicit neural representation.

24, TITLE: Acorn: adaptive coordinate networks for neural scene representation
https://dl.acm.org/doi/abs/10.1145/3450626.3459785
AUTHORS: Julien N. P. Martel, David B. Lindell, Connor Z. Lin, Eric R. Chan, Marco Monteiro, Gordon Wetzstein
HIGHLIGHT: Here, we introduce a new hybrid implicit-explicit network architecture and training strategy that adaptively allocates resources during training and inference based on the local complexity of a signal of interest.

25, TITLE: Mixture of volumetric primitives for efficient neural rendering
https://dl.acm.org/doi/abs/10.1145/3450626.3459863
AUTHORS: Stephen Lombardi, Tomas Simon, Gabriel Schwartz, Michael Zollhoefer, Yaser Sheikh, Jason Saragih
HIGHLIGHT: We present Mixture of Volumetric Primitives (MVP), a representation for rendering dynamic 3D content that combines the completeness of volumetric representations with the efficiency of primitive-based rendering, e.g., point-based or mesh-based methods.

26, TITLE: Scalable image-based indoor scene rendering with reflections
https://dl.acm.org/doi/abs/10.1145/3450626.3459849
AUTHORS: Jiamin Xu, Xiuchao Wu, Zihan Zhu, Qixing Huang, Yin Yang, Hujun Bao, Weiwei Xu
HIGHLIGHT: This paper proposes a novel scalable image-based rendering (IBR) pipeline for indoor scenes with reflections.

27, TITLE: Low-cost SPAD sensing for non-line-of-sight tracking, material classification and depth imaging
https://dl.acm.org/doi/abs/10.1145/3450626.3459824
AUTHORS: Clara Callenberg, Zheng Shi, Felix Heide, Matthias B. Hullin
HIGHLIGHT: In this paper, we adopt an existing evaluation platform for commodity SPAD sensors, and modify it to unlock time-of-flight (ToF) histogramming and hence computational imaging.

28, TITLE: Knitting 4D garments with elasticity controlled for body motion
https://dl.acm.org/doi/abs/10.1145/3450626.3459868
AUTHORS: Zishun Liu, Xingjian Han, Yuchen Zhang, Xiangjia Chen, Yu-Kun Lai, Eugeni L. Doubrovski, Emily Whiting, Charlie C. L. Wang
HIGHLIGHT: In this paper, we present a new computational pipeline for designing and fabricating 4D garments as knitwear that considers comfort during body movement.

29, TITLE: Knit sketching: from cut & sew patterns to machine-knit garments
https://dl.acm.org/doi/abs/10.1145/3450626.3459752
AUTHORS: Alexandre Kaspar, Kui Wu, Yiyue Luo, Liane Makatura, Wojciech Matusik
HIGHLIGHT: We present a novel workflow to design and program knitted garments for industrial whole-garment knitting machines.

30, TITLE: KnitKit: a flexible system for machine knitting of customizable textiles
https://dl.acm.org/doi/abs/10.1145/3450626.3459790
AUTHORS: Georges Nader, Yu Han Quek, Pei Zhi Chia, Oliver Weeger, Sai-Kit Yeung
HIGHLIGHT: In this work, we introduce KnitKit, a flexible and customizable system for the computational design and production of functional, multi-material, and three-dimensional knitted textiles.

31, TITLE: A mathematical foundation for foundation paper pieceable quilts
https://dl.acm.org/doi/abs/10.1145/3450626.3459853
AUTHORS: Mackenzie Leake, Gilbert Bernstein, Abe Davis, Maneesh Agrawala
HIGHLIGHT: In this work we mathematically formalize the foundation paper piecing process and use this formalization to develop an algorithm that can automatically check if an input pattern geometry is foundation paper pieceable.

32, TITLE: Physical validation of simulators in computer graphics: a new framework dedicated to slender elastic structures and frictional contact
https://dl.acm.org/doi/abs/10.1145/3450626.3459931
AUTHORS: Victor Romero, Mickaël Ly, Abdullah Haroon Rasheed, Raphaël Charrondière, Arnaud Lazarus, Sébastien Neukirch, Florence Bertails-Descoubes
HIGHLIGHT: We introduce a selected set of protocols inspired from the Soft Matter Physics community in order to validate Computer Graphics simulators of slender elastic structures possibly subject to dry frictional contact.

33, TITLE: DeepFormableTag: end-to-end generation and recognition of deformable fiducial markers
https://dl.acm.org/doi/abs/10.1145/3450626.3459762
AUTHORS: Mustafa B. Yaldiz, Andreas Meuleman, Hyeonjoong Jang, Hyunho Ha, Min H. Kim
HIGHLIGHT: To overcome these limitations, we propose a novel deformable fiducial marker system that consists of three main parts: First, a fiducial marker generator creates a set of free-form color patterns to encode significantly large-scale information in unique visual codes.

34, TITLE: High-order differentiable autoencoder for nonlinear model reduction
https://dl.acm.org/doi/abs/10.1145/3450626.3459754
AUTHORS: Siyuan Shen, Yin Yang, Tianjia Shao, He Wang, Chenfanfu Jiang, Lei Lan, Kun Zhou
HIGHLIGHT: This paper provides a new avenue for exploiting deep neural networks to improve physics-based simulation.

35, TITLE: The shape matching element method: direct animation of curved surface models
https://dl.acm.org/doi/abs/10.1145/3450626.3459772
AUTHORS: Ty Trusty, Honglin Chen, David I. W. Levin
HIGHLIGHT: We introduce a new method for direct physics-based animation of volumetric curved models, represented using NURBS surfaces.

36, TITLE: Fast median filters using separable sorting networks
https://dl.acm.org/doi/abs/10.1145/3450626.3459773
AUTHORS: Andrew Adams
HIGHLIGHT: This paper describes new sorting networks that efficiently compute median filters of arbitrary size.

37, TITLE: End-to-end complex lens design with differentiate ray tracing
https://dl.acm.org/doi/abs/10.1145/3450626.3459674
AUTHORS: Qilin Sun, Congli Wang, Qiang Fu, Xiong Dun, Wolfgang Heidrich
HIGHLIGHT: To overcome these challenges, we propose a general end-to-end complex lens design framework enabled by a differentiable ray tracing image formation model.

38, TITLE: Direct delta mush skinning compression with continuous examples
https://dl.acm.org/doi/abs/10.1145/3450626.3459779
AUTHORS: Binh Huy Le, Keven Villeneuve, Carlos Gonzalez-Ochoa
HIGHLIGHT: In this paper, we introduce a compression method that takes a DDM model and splits it into two layers: the first layer is a smaller DDM model that computes a set of virtual bone transformations and the second layer is a Linear Blend Skinning model that computes per-vertex transformations from the output of the first layer.

39, TITLE: Fast quasi-harmonic weights for geometric data interpolation
https://dl.acm.org/doi/abs/10.1145/3450626.3459801
AUTHORS: Yu Wang, Justin Solomon
HIGHLIGHT: We propose quasi-harmonic weights for interpolating geometric data, which are orders of magnitude faster to compute than state-of-the-art.

40, TITLE: Real-time locally injective volumetric deformation
https://dl.acm.org/doi/abs/10.1145/3450626.3459794
AUTHORS: Wentao Liao, Renjie Chen, Yuchen Hua, Ligang Liu, Ofir Weber
HIGHLIGHT: We present a highly efficient method for interactive volumetric meshless shape deformation.

41, TITLE: Guaranteed globally injective 3D deformation processing
https://dl.acm.org/doi/abs/10.1145/3450626.3459757
AUTHORS: Yu Fang, Minchen Li, Chenfanfu Jiang, Danny M. Kaufman
HIGHLIGHT: We extend recent advances in the numerical time-integration of contacting elastodynamics [Li et al. 2020] to build a new framework, called Injective Deformation Processing (IDP), for the robust solution of a wide range of mesh deformation problems requiring injectivity.

42, TITLE: Path-space differentiable rendering of participating media
https://dl.acm.org/doi/abs/10.1145/3450626.3459782
AUTHORS: Cheng Zhang, Zihan Yu, Shuang Zhao
HIGHLIGHT: In this paper, we bridge this gap by showing how generalized path integrals can be differentiated with respect to arbitrary scene parameters.

43, TITLE: Antithetic sampling for Monte Carlo differentiable rendering
https://dl.acm.org/doi/abs/10.1145/3450626.3459783
AUTHORS: Cheng Zhang, Zhao Dong, Michael Doggett, Shuang Zhao
HIGHLIGHT: To address this problem, we introduce antithetic sampling of BSDFs and light-transport paths, allowing significantly faster convergence and can be easily integrated into existing differentiable rendering pipelines.

44, TITLE: Monte Carlo estimators for differential light transport
https://dl.acm.org/doi/abs/10.1145/3450626.3459807
AUTHORS: Tizian Zeltner, Sébastien Speierer, Iliyan Georgiev, Wenzel Jakob
HIGHLIGHT: In this paper, we provide a taxonomy and analysis of different estimators for differential light transport to provide intuition about these and related questions.

45, TITLE: SANM: a symbolic asymptotic numerical solver with applications in mesh deformation
https://dl.acm.org/doi/abs/10.1145/3450626.3459755
AUTHORS: Kai Jia
HIGHLIGHT: This paper presents a novel solver, SANM, that applies ANM to solve symbolically represented nonlinear systems.

46, TITLE: Surface multigrid via intrinsic prolongation
https://dl.acm.org/doi/abs/10.1145/3450626.3459768
AUTHORS: Hsueh-Ti Derek Liu, Jiayi Eris Zhang, Mirela Ben-Chen, Alec Jacobson
HIGHLIGHT: We propose a novel method for computing the prolongation for triangulated surfaces based on intrinsic geometry, enabling an efficient geometric multigrid solver for curved surfaces.

47, TITLE: Multiscale cholesky preconditioning for ill-conditioned problems
https://dl.acm.org/doi/abs/10.1145/3450626.3459851
AUTHORS: Jiong Chen, Florian Schäfer, Jin Huang, Mathieu Desbrun
HIGHLIGHT: We propose a novel approach to the efficient preconditioning of such problems which often emerge from the discretization over unstructured meshes of partial differential equations with heterogeneous and anisotropic coefficients.

48, TITLE: WRAPD: weighted rotation-aware ADMM for parameterization and deformation
https://dl.acm.org/doi/abs/10.1145/3450626.3459942
AUTHORS: George E. Brown, Rahul Narain
HIGHLIGHT: Local-global solvers such as ADMM for elastic simulation and geometry optimization struggle to resolve large rotations such as bending and twisting modes, and large distortions in the presence of barrier energies. We propose two improvements to address these challenges.

49, TITLE: Neural monocular 3D human motion capture with physical awareness
https://dl.acm.org/doi/abs/10.1145/3450626.3459825
AUTHORS: Soshi Shimada, Vladislav Golyanik, Weipeng Xu, Patrick Pérez, Christian Theobalt

HIGHLIGHT: We present a new trainable system for physically plausible markerless 3D human motion capture, which achieves state-of-the-art results in a broad range of challenging scenarios.

50, TITLE: MoCap-solver: a neural solver for optical motion capture data
https://dl.acm.org/doi/abs/10.1145/3450626.3459681
AUTHORS: Kang Chen, Yupan Wang, Song-Hai Zhang, Sen-Zhe Xu, Weidong Zhang, Shi-Min Hu
HIGHLIGHT: In this work, we present MoCap-Solver, a production-ready neural solver for optical MoCap data.

51, TITLE: Capturing detailed deformations of moving human bodies
https://dl.acm.org/doi/abs/10.1145/3450626.3459792
AUTHORS: He Chen, Hyojoon Park, Kutay Macit, Ladislav Kavan
HIGHLIGHT: We present a new method to capture detailed human motion, sampling more than 1000 unique points on the body.

52, TITLE: TransPose: real-time 3D human translation and pose estimation with six inertial sensors
https://dl.acm.org/doi/abs/10.1145/3450626.3459786
AUTHORS: Xinyu Yi, Yuxiao Zhou, Feng Xu
HIGHLIGHT: In this paper, we present TransPose, a DNN-based approach to perform full motion capture (with both global translations and body poses) from only 6 Inertial Measurement Units (IMUs) at over 90 fps.

53, TITLE: Real-time 3D neural facial animation from binocular video
https://dl.acm.org/doi/abs/10.1145/3450626.3459806
AUTHORS: Chen Cao, Vasu Agrawal, Fernando De La Torre, Lele Chen, Jason Saragih, Tomas Simon, Yaser Sheikh
HIGHLIGHT: We present a method for performing real-time facial animation of a 3D avatar from binocular video.

54, TITLE: Learning an animatable detailed 3D face model from in-the-wild images
https://dl.acm.org/doi/abs/10.1145/3450626.3459936
AUTHORS: Yao Feng, Haiwen Feng, Michael J. Black, Timo Bolkart
HIGHLIGHT: We present the first approach that regresses 3D face shape and animatable details that are specific to an individual but change with expression.

55, TITLE: Deep relightable appearance models for animatable faces
https://dl.acm.org/doi/abs/10.1145/3450626.3459829
AUTHORS: Sai Bi, Stephen Lombardi, Shunsuke Saito, Tomas Simon, Shih-En Wei, Kevyn Mcphail, Ravi Ramamoorthi, Yaser Sheikh, Jason Saragih
HIGHLIGHT: We present a method for building high-fidelity animatable 3D face models that can be posed and rendered with novel lighting environments in real-time.

56, TITLE: DeepFaceEditing: deep face generation and editing with disentangled geometry and appearance control
https://dl.acm.org/doi/abs/10.1145/3450626.3459760
AUTHORS: Shu-Yu Chen, Feng-Lin Liu, Yu-Kun Lai, Paul L. Rosin, Chunpeng Li, Hongbo Fu, Lin Gao
HIGHLIGHT: To address this issue, we propose DeepFaceEditing, a structured disentanglement framework specifically designed for face images to support face generation and editing with disentangled control of geometry and appearance.

57, TITLE: Discovering diverse athletic jumping strategies
https://dl.acm.org/doi/abs/10.1145/3450626.3459817
AUTHORS: Zhiqi Yin, Zeshi Yang, Michiel Van De Panne, Kangkang Yin
HIGHLIGHT: We present a framework that enables the discovery of diverse and natural-looking motion strategies for athletic skills such as the high jump.

58, TITLE: Neural animation layering for synthesizing martial arts movements
https://dl.acm.org/doi/abs/10.1145/3450626.3459881
AUTHORS: Sebastian Starke, Yiwei Zhao, Fabio Zinno, Taku Komura
HIGHLIGHT: In this paper, we propose a deep learning framework to produce a large variety of martial arts movements in a controllable manner from raw motion capture data.

59, TITLE: Learning a family of motor skills from a single motion clip
https://dl.acm.org/doi/abs/10.1145/3450626.3459774
AUTHORS: Seyoung Lee, Sunmin Lee, Yongwoo Lee, Jehee Lee
HIGHLIGHT: We present a new algorithm that learns a parameterized family of motor skills from a single motion clip.

60, TITLE: Real-time deep dynamic characters
https://dl.acm.org/doi/abs/10.1145/3450626.3459749
AUTHORS: Marc Habermann, Lingjie Liu, Weipeng Xu, Michael Zollhoefer, Gerard Pons-Moll, Christian Theobalt
HIGHLIGHT: We propose a deep videorealistic 3D human character model displaying highly realistic shape, motion, and dynamic appearance learned in a new weakly supervised way from multi-view imagery.

61, TITLE: Dynamic closest color warping to sort and compare palettes
https://dl.acm.org/doi/abs/10.1145/3450626.3459776
AUTHORS: Suzi kim, Sunghee Choi
HIGHLIGHT: This paper proposes a method to assess the similarity between color palettes by sorting colors.

62, TITLE: Seamless manga inpainting with semantics awareness
https://dl.acm.org/doi/abs/10.1145/3450626.3459822
AUTHORS: Minshan Xie, Menghan Xia, Xueting Liu, Chengze Li, Tien-Tsin Wong
HIGHLIGHT: In this paper, we present the first manga inpainting method, a deep learning model, that generates high-quality results.

63, TITLE: Kelvin transformations for simulations on infinite domains
https://dl.acm.org/doi/abs/10.1145/3450626.3459809
AUTHORS: Mohammad Sina Nabizadeh, Ravi Ramamoorthi, Albert Chern
HIGHLIGHT: We introduce a general technique to transform a PDE problem on an unbounded domain to a PDE problem on a bounded domain.

64, TITLE: Incompressible flow simulation on vortex segment clouds
https://dl.acm.org/doi/abs/10.1145/3450626.3459865
AUTHORS: Shiying Xiong, Rui Tao, Yaorui Zhang, Fan Feng, Bo Zhu
HIGHLIGHT: We propose a novel Lagrangian geometric representation using segment clouds to simulate incompressible fluid exhibiting strong anisotropic vortical features.

65, TITLE: Clebsch gauge fluid
https://dl.acm.org/doi/abs/10.1145/3450626.3459866
AUTHORS: Shuqi Yang, Shiying Xiong, Yaorui Zhang, Fan Feng, Jinyuan Liu, Bo Zhu
HIGHLIGHT: We propose a novel gauge fluid solver based on Clebsch wave functions to solve incompressible fluid equations.

66, TITLE: Learning meaningful controls for fluids
https://dl.acm.org/doi/abs/10.1145/3450626.3459845
AUTHORS: Mengyu Chu, Nils Thuerey, Hans-Peter Seidel, Christian Theobalt, Rhaleb Zayer
HIGHLIGHT: We propose a novel data-driven conditional adversarial model that solves the challenging and theoretically ill-posed problem of deriving plausible velocity fields from a single frame of a density field.

67, TITLE: Unconventional patterns on surfaces
https://dl.acm.org/doi/abs/10.1145/3450626.3459933
AUTHORS: Merel Meekes, Amir Vaxman
HIGHLIGHT: We present a unified method to meshing surfaces with unconventional patterns, both periodic and aperiodic.

68, TITLE: Foldover-free maps in 50 lines of code
https://dl.acm.org/doi/abs/10.1145/3450626.3459847
AUTHORS: Vladimir Garanzha, Igor Kaporin, Liudmila Kudryavtseva, François Protais, Nicolas Ray, Dmitry Sokolov
HIGHLIGHT: In this paper, we propose a mapping method inspired by the untangling problem and compare its performance to the state of the art.

69, TITLE: Discrete conformal equivalence of polyhedral surfaces
https://dl.acm.org/doi/abs/10.1145/3450626.3459763
AUTHORS: Mark Gillespie, Boris Springborn, Keenan Crane
HIGHLIGHT: This paper describes a numerical method for surface parameterization, yielding maps that are locally injective and discretely conformal in an exact sense.

70, TITLE: RXMesh: a GPU mesh data structure
https://dl.acm.org/doi/abs/10.1145/3450626.3459748
AUTHORS: Ahmed H. Mahmoud, Serban D. Porumbescu, John D. Owens
HIGHLIGHT: We propose a new static high-performance mesh data structure for triangle surface meshes on the GPU.

71, TITLE: Authoring consistent landscapes with flora and fauna
https://dl.acm.org/doi/abs/10.1145/3450626.3459952
AUTHORS: Pierre Ecormier-Nocca, Guillaume Cordonnier, Philippe Carrez, Anne-Marie Moigne, Pooran Memari, Bedrich Benes, Marie-Paule Cani
HIGHLIGHT: We present a novel method for authoring landscapes with flora and fauna while considering their mutual interactions.

72, TITLE: Fast linking numbers for topology verification of loopy structures
https://dl.acm.org/doi/abs/10.1145/3450626.3459778
AUTHORS: Ante Qu, Doug L. James
HIGHLIGHT: In this paper, we explore a family of methods for efficiently computing and verifying linking numbers between closed curves, and apply these to applications in geometry processing, animation, and simulation, so as to verify that topological invariants are preserved during and after processing of the input models.

73, TITLE: Systematically differentiating parametric discontinuities
https://dl.acm.org/doi/abs/10.1145/3450626.3459775
AUTHORS: Sai Praveen Bangaru, Jesse Michel, Kevin Mu, Gilbert Bernstein, Tzu-Mao Li, Jonathan Ragan-Kelley
HIGHLIGHT: We propose a systematic approach to differentiating integrals with discontinuous integrands, by developing a new differentiable programming language.

74, TITLE: Path replay backpropagation: differentiating light paths using constant memory and linear time
https://dl.acm.org/doi/abs/10.1145/3450626.3459804
AUTHORS: Delio Vicini, Sébastien Speierer, Wenzel Jakob
HIGHLIGHT: In this paper, we propose a new unbiased backpropagation algorithm for rendering that only requires constant memory, and whose computation time is linear in the number of scattering events (i.e., just like path tracing).

75, TITLE: Revisiting integration in the material point method: a scheme for easier separation and less dissipation
https://dl.acm.org/doi/abs/10.1145/3450626.3459678
AUTHORS: Yun (Raymond) Fei, Qi Guo, Rundong Wu, Li Huang, Ming Gao
HIGHLIGHT: We propose an integration scheme that corrects particle positions at each time step.

76, TITLE: Thin-film smoothed particle hydrodynamics fluid
https://dl.acm.org/doi/abs/10.1145/3450626.3459864
AUTHORS: Mengdi Wang, Yitong Deng, Xiangxin Kong, Aditya H. Prasad, Shiying Xiong, Bo Zhu
HIGHLIGHT: We propose a particle-based method to simulate thin-film fluid that jointly facilitates aggressive surface deformation and vigorous tangential flows.

77, TITLE: A momentum-conserving implicit material point method for surface tension with contact angles and spatial gradients
https://dl.acm.org/doi/abs/10.1145/3450626.3459874
AUTHORS: Jingyu Chen, Victoria Kala, Alan Marquez-Razon, Elias Gueidon, David A. B. Hyde, Joseph Teran
HIGHLIGHT: We present a novel Material Point Method (MPM) discretization of surface tension forces that arise from spatially varying surface energies.

78, TITLE: Constrained willmore surfaces
https://dl.acm.org/doi/abs/10.1145/3450626.3459759
AUTHORS: Yousuf Soliman, Albert Chern, Olga Diamanti, Felix Knöppel, Ulrich Pinkall, Peter Schröder
HIGHLIGHT: We present an efficient algorithm for (conformally) constrained Willmore surfaces using triangle meshes of arbitrary topology with or without boundary.

79, TITLE: Computing minimal surfaces with differential forms
https://dl.acm.org/doi/abs/10.1145/3450626.3459781
AUTHORS: Stephanie Wang, Albert Chern
HIGHLIGHT: We describe a new algorithm that solves a classical geometric problem: Find a surface of minimal area bordered by an arbitrarily prescribed boundary curve.

80, TITLE: Computational design of weingarten surfaces
https://dl.acm.org/doi/abs/10.1145/3450626.3459939
AUTHORS: Davide Pellis, Martin Kilian, Helmut Pottmann, Mark Pauly
HIGHLIGHT: In this paper we study Weingarten surfaces and explore their potential for fabrication-aware design in freeform architecture.

81, TITLE: TryOnGAN: body-aware try-on via layered interpolation
https://dl.acm.org/doi/abs/10.1145/3450626.3459884
AUTHORS: Kathleen M Lewis, Srivatsan Varadharajan, Ira Kemelmacher-Shlizerman
HIGHLIGHT: Given a pair of images---target person and garment on another person---we automatically generate the target person in the given garment.

82, TITLE: StyleCariGAN: caricature generation via StyleGAN feature map modulation
https://dl.acm.org/doi/abs/10.1145/3450626.3459860
AUTHORS: Wonjong Jang, Gwangjin Ju, Yucheol Jung, Jiaolong Yang, Xin Tong, Seungyong Lee
HIGHLIGHT: We present a caricature generation framework based on shape and style manipulation using StyleGAN.

83, TITLE: AgileGAN: stylizing portraits by inversion-consistent transfer learning
https://dl.acm.org/doi/abs/10.1145/3450626.3459771
AUTHORS: Guoxian Song, Linjie Luo, Jing Liu, Wan-Chun Ma, Chunpong Lai, Chuanxia Zheng, Tat-Jen Cham
HIGHLIGHT: Hence we propose AgileGAN, a framework that can generate high quality stylistic portraits via inversion-consistent transfer learning.

84, TITLE: Unified particle system for multiple-fluid flow and porous material
https://dl.acm.org/doi/abs/10.1145/3450626.3459764
AUTHORS: Bo Ren, Ben Xu, Chenfeng Li
HIGHLIGHT: We propose a unified particle framework for the simulation of multiple-fluid flows and porous materials.

85, TITLE: A unified second-order accurate in time MPM formulation for simulating viscoelastic liquids with phase change
https://dl.acm.org/doi/abs/10.1145/3450626.3459820
AUTHORS: Haozhe Su, Tao Xue, Chengguizi Han, Chenfanfu Jiang, Mridul Aanjaneya
HIGHLIGHT: Using GS4 and our generalized constitutive model, we present a Material Point Method (MPM) for simulating various viscoelastic liquid behaviors, such as classical liquid rope coiling, buckling, folding, and shear thinning/thickening.

86, TITLE: Solid-fluid interaction with surface-tension-dominant contact
https://dl.acm.org/doi/abs/10.1145/3450626.3459862
AUTHORS: Liangwang Ruan, Jinyuan Liu, Bo Zhu, Shinjiro Sueda, Bin Wang, Baoquan Chen
HIGHLIGHT: We propose a novel three-way coupling method to model the contact interaction between solid and fluid driven by strong surface tension.

87, TITLE: ManipNet: neural manipulation synthesis with a hand-object spatial representation
https://dl.acm.org/doi/abs/10.1145/3450626.3459830
AUTHORS: He Zhang, Yuting Ye, Takaaki Shiratori, Taku Komura
HIGHLIGHT: In this paper, we propose a hand-object spatial representation that can achieve generalization from limited data.

88, TITLE: Interactive modelling of volumetric musculoskeletal anatomy
https://dl.acm.org/doi/abs/10.1145/3450626.3459769
AUTHORS: Rinat Abdrashitov, Seungbae Bang, David Levin, Karan Singh, Alec Jacobson
HIGHLIGHT: We present a new approach for modelling musculoskeletal anatomy.

89, TITLE: Highlight-aware two-stream network for single-image SVBRDF acquisition
https://dl.acm.org/doi/abs/10.1145/3450626.3459854
AUTHORS: Jie Guo, Shuichang Lai, Chengzhi Tao, Yuelong Cai, Lei Wang, Yanwen Guo, Ling-Qi Yan
HIGHLIGHT: This paper addresses the task of estimating spatially-varying reflectance (i.e., SVBRDF) from a single, casually captured image.

90, TITLE: Free-form scanning of non-planar appearance with neural trace photography
https://dl.acm.org/doi/abs/10.1145/3450626.3459679

AUTHORS: Xiaohe Ma, Kaizhang Kang, Ruisheng Zhu, Hongzhi Wu, Kun Zhou
HIGHLIGHT: We propose neural trace photography, a novel framework to automatically learn high-quality scanning of non-planar, complex anisotropic appearance.

91, TITLE: The effect of shape and illumination on material perception: model and applications
https://dl.acm.org/doi/abs/10.1145/3450626.3459813
AUTHORS: Ana Serrano, Bin Chen, Chao Wang, Michal Piovar?i, Hans-Peter Seidel, Piotr Didyk, Karol Myszkowski
HIGHLIGHT: In this work, we collect a large-scale dataset of perceptual ratings of appearance attributes with more than 215,680 responses for 42,120 distinct combinations of material, shape, and illumination.

92, TITLE: The design space of plane elastic curves
https://dl.acm.org/doi/abs/10.1145/3450626.3459800
AUTHORS: Christian Hafner, Bernd Bickel
HIGHLIGHT: In this work, we derive an intuitive but rigorous geometric characterization of the design space of plane elastic rods with variable stiffness.

93, TITLE: 3D weaving with curved ribbons
https://dl.acm.org/doi/abs/10.1145/3450626.3459788
AUTHORS: Yingying Ren, Julian Panetta, Tian Chen, Florin Isvoranu, Samuel Poincloux, Christopher Brandt, Alison Martin, Mark Pauly
HIGHLIGHT: We present an optimization-based approach to solving the inverse design problem for such woven structures.

94, TITLE: WireRoom: model-guided explorative design of abstract wire art
https://dl.acm.org/doi/abs/10.1145/3450626.3459796
AUTHORS: Zhijin Yang, Pengfei Xu, Hongbo Fu, Hui Huang
HIGHLIGHT: We present WireRoom, a computational framework for the intelligent design of abstract 3D wire art to depict a given 3D model.

95, TITLE: Learning active quasistatic physics-based models from data
https://dl.acm.org/doi/abs/10.1145/3450626.3459883
AUTHORS: Sangeetha Grama Srinivasan, Qisi Wang, Junior Rojas, Gergely Klár, Ladislav Kavan, Eftychios Sifakis
HIGHLIGHT: We present a training paradigm and several scalability-oriented enhancements that allow us to train effectively while accommodating high-resolution volumetric models, with as many as a quarter million simulation elements.

96, TITLE: Learning skeletal articulations with neural blend shapes
https://dl.acm.org/doi/abs/10.1145/3450626.3459852
AUTHORS: Peizhuo Li, Kfir Aberman, Rana Hanocka, Libin Liu, Olga Sorkine-Hornung, Baoquan Chen
HIGHLIGHT: In this work, we develop a neural technique for articulating 3D characters using enveloping with a pre-defined skeletal structure which produces high quality pose dependent deformations.

97, TITLE: Learning contact corrections for handle-based subspace dynamics
https://dl.acm.org/doi/abs/10.1145/3450626.3459875
AUTHORS: Cristian Romero, Dan Casas, Jesús Pérez, Miguel Otaduy
HIGHLIGHT: This paper introduces a novel subspace method for the simulation of dynamic deformations.

98, TITLE: DiffAqua: a differentiable computational design pipeline for soft underwater swimmers with shape interpolation
https://dl.acm.org/doi/abs/10.1145/3450626.3459832
AUTHORS: Pingchuan Ma, Tao Du, John Z. Zhang, Kui Wu, Andrew Spielberg, Robert K. Katzschmann, Wojciech Matusik
HIGHLIGHT: In this paper, we present a differentiable pipeline for co-designing a soft swimmer's geometry and controller.

99, TITLE: Designing an encoder for StyleGAN image manipulation
https://dl.acm.org/doi/abs/10.1145/3450626.3459838
AUTHORS: Omer Tov, Yuval Alaluf, Yotam Nitzan, Or Patashnik, Daniel Cohen-Or
HIGHLIGHT: In this paper, we carefully study the latent space of StyleGAN, the state-of-the-art unconditional generator.

100, TITLE: SWAGAN: a style-based wavelet-driven generative model
https://dl.acm.org/doi/abs/10.1145/3450626.3459836
AUTHORS: Rinon Gal, Dana Cohen Hochberg, Amit Bermano, Daniel Cohen-Or

HIGHLIGHT: To address this issue, we present a novel general-purpose Style and WAvelet based GAN (SWAGAN) that implements progressive generation in the frequency domain.

101, TITLE: A fitted radiance and attenuation model for realistic atmospheres
https://dl.acm.org/doi/abs/10.1145/3450626.3459758
AUTHORS: Alexander Wilkie, Petr Vevoda, Thomas Bashford-Rogers, LukáÅ¡ HoÅ¡ek, TomáÅ¡ Iser, Monika Kolá?ová, Tobias Rittig, Jaroslav K?ivánek
HIGHLIGHT: We present a fitted model of sky dome radiance and attenuation for realistic terrestrial atmospheres.

102, TITLE: A non-exponential transmittance model for volumetric scene representations
https://dl.acm.org/doi/abs/10.1145/3450626.3459815
AUTHORS: Delio Vicini, Wenzel Jakob, Anton Kaplanyan
HIGHLIGHT: We introduce a novel transmittance model to improve the volumetric representation of 3D scenes.

103, TITLE: An unbiased ray-marching transmittance estimator
https://dl.acm.org/doi/abs/10.1145/3450626.3459937
AUTHORS: Markus Kettunen, Eugene D'Eon, Jacopo Pantaleoni, Jan Novák
HIGHLIGHT: We present an in-depth analysis of the sources of variance in state-of-the-art unbiased volumetric transmittance estimators, and propose several new methods for improving their efficiency.

104, TITLE: Fast diffraction pathfinding for dynamic sound propagation
https://dl.acm.org/doi/abs/10.1145/3450626.3459751
AUTHORS: Carl Schissler, Gregor Mückl, Paul Calamia
HIGHLIGHT: To this end, we present a dynamic geometric diffraction approach that consists of an extensive mesh preprocessing pipeline and complementary runtime algorithm.

105, TITLE: A generic framework for physical light transport
https://dl.acm.org/doi/abs/10.1145/3450626.3459791
AUTHORS: Shlomi Steinberg, Ling-Qi Yan
HIGHLIGHT: In this paper, we derive the first global light transport framework that is able to account for these properties of light and, therefore, is fully consistent with Maxwell's electromagnetic theory.

106, TITLE: BRDF importance sampling for polygonal lights
https://dl.acm.org/doi/abs/10.1145/3450626.3459672
AUTHORS: Christoph Peters
HIGHLIGHT: We present such methods to sample convex polygonal lights approximately proportional to diffuse and specular BRDFs times the cosine term.

107, TITLE: Optimizing dyadic nets
https://dl.acm.org/doi/abs/10.1145/3450626.3459880
AUTHORS: Abdalla G. M. Ahmed, Peter Wonka
HIGHLIGHT: We present a novel constructive algorithm that can exhaustively generate all nets --- up to m-bit resolution --- and thereby compute the exact number of distinct nets.

108, TITLE: Endless loops: detecting and animating periodic patterns in still images
https://dl.acm.org/doi/abs/10.1145/3450626.3459935
AUTHORS: Tavi Halperin, Hanit Hakim, Orestis Vantzos, Gershon Hochman, Netai Benaim, Lior Sassy, Michael Kupchik, Ofir Bibi, Ohad Fried
HIGHLIGHT: We present an algorithm for producing a seamless animated loop from a single image.

109, TITLE: Driving-signal aware full-body avatars
https://dl.acm.org/doi/abs/10.1145/3450626.3459850
AUTHORS: Timur Bagautdinov, Chenglei Wu, Tomas Simon, Fabián Prada, Takaaki Shiratori, Shih-En Wei, Weipeng Xu, Yaser Sheikh, Jason Saragih
HIGHLIGHT: We present a learning-based method for building driving-signal aware full-body avatars.

110, TITLE: AMP: adversarial motion priors for stylized physics-based character control
https://dl.acm.org/doi/abs/10.1145/3450626.3459670
AUTHORS: Xue Bin Peng, Ze Ma, Pieter Abbeel, Sergey Levine, Angjoo Kanazawa

HIGHLIGHT: In this work, we propose to obviate the need to manually design imitation objectives and mechanisms for motion selection by utilizing a fully automated approach based on adversarial imitation learning.

111, TITLE: ChoreoMaster: choreography-oriented music-driven dance synthesis
https://dl.acm.org/doi/abs/10.1145/3450626.3459932
AUTHORS: Kang Chen, Zhipeng Tan, Jin Lei, Song-Hai Zhang, Yuan-Chen Guo, Weidong Zhang, Shi-Min Hu
HIGHLIGHT: In this paper, we present ChoreoMaster, a production-ready music-driven dance motion synthesis system.

112, TITLE: Control strategies for physically simulated characters performing two-player competitive sports
https://dl.acm.org/doi/abs/10.1145/3450626.3459761
AUTHORS: Jungdam Won, Deepak Gopinath, Jessica Hodgins
HIGHLIGHT: In this paper, we develop a learning framework that generates control policies for physically simulated athletes who have many degrees-of-freedom.

113, TITLE: Learning time-critical responses for interactive character control
https://dl.acm.org/doi/abs/10.1145/3450626.3459826
AUTHORS: Kyungho Lee, Sehee Min, Sunmin Lee, Jehee Lee
HIGHLIGHT: In this paper, we present a novel teacher-student framework to learn time-critically responsive policies, which guarantee the time-to-completion between user inputs and their associated responses regardless of the size and composition of the motion databases.

114, TITLE: Consistent depth of moving objects in video
https://dl.acm.org/doi/abs/10.1145/3450626.3459871
AUTHORS: Zhoutong Zhang, Forrester Cole, Richard Tucker, William T. Freeman, Tali Dekel
HIGHLIGHT: We present a method to estimate depth of a dynamic scene, containing arbitrary moving objects, from an ordinary video captured with a moving camera.

115, TITLE: Editable free-viewpoint video using a layered neural representation
https://dl.acm.org/doi/abs/10.1145/3450626.3459756
AUTHORS: Jiakai Zhang, Xinhang Liu, Xinyi Ye, Fuqiang Zhao, Yanshun Zhang, Minye Wu, Yingliang Zhang, Lan Xu, Jingyi Yu
HIGHLIGHT: To fill this gap, in this paper, we propose the first approach for editable free-viewpoint video generation for large-scale view-dependent dynamic scenes using only 16 cameras.

116, TITLE: Video recoloring via spatial-temporal geometric palettes
https://dl.acm.org/doi/abs/10.1145/3450626.3459675
AUTHORS: Zheng-Jun Du, Kai-Xiang Lei, Kun Xu, Jianchao Tan, Yotam Gingold
HIGHLIGHT: We introduce a spatial-temporal geometry-based approach to video recoloring.

117, TITLE: SP-GAN: sphere-guided 3D shape generation and manipulation
https://dl.acm.org/doi/abs/10.1145/3450626.3459766
AUTHORS: Ruihui Li, Xianzhi Li, Ka-Hei Hui, Chi-Wing Fu
HIGHLIGHT: We present SP-GAN, a new unsupervised sphere-guided generative model for direct synthesis of 3D shapes in the form of point clouds.

118, TITLE: Unsupervised learning for cuboid shape abstraction via joint segmentation from point clouds
https://dl.acm.org/doi/abs/10.1145/3450626.3459873
AUTHORS: Kaizhi Yang, Xuejin Chen
HIGHLIGHT: In this paper, we propose an unsupervised shape abstraction method to map a point cloud into a compact cuboid representation.

119, TITLE: ShapeMOD: macro operation discovery for 3D shape programs
https://dl.acm.org/doi/abs/10.1145/3450626.3459821
AUTHORS: R. Kenny Jones, David Charatan, Paul Guerrero, Niloy J. Mitra, Daniel Ritchie
HIGHLIGHT: In this paper, we present ShapeMOD, an algorithm for automatically discovering macros that are useful across large datasets of 3D shape programs.

120, TITLE: Guaranteed-quality higher-order triangular meshing of 2D domains
https://dl.acm.org/doi/abs/10.1145/3450626.3459673
AUTHORS: Manish Mandad, Marcel Campen

HIGHLIGHT: We present a guaranteed quality mesh generation algorithm for the curvilinear triangulation of planar domains with piecewise polynomial boundary.

121, TITLE: Reliable feature-line driven quad-remeshing
https://dl.acm.org/doi/abs/10.1145/3450626.3459941
AUTHORS: Nico Pietroni, Stefano Nuvoli, Thomas Alderighi, Paolo Cignoni, Marco Tarini
HIGHLIGHT: We present a new algorithm for the semi-regular quadrangulation of an input surface, driven by its line features, such as sharp creases.

122, TITLE: PH-CPF: planar hexagonal meshing using coordinate power fields
https://dl.acm.org/doi/abs/10.1145/3450626.3459770
AUTHORS: Kacper Pluta, Michal Edelstein, Amir Vaxman, Mirela Ben-Chen
HIGHLIGHT: We present a new approach for computing planar hexagonal meshes that approximate a given surface, represented as a triangle mesh.

123, TITLE: Bijective and coarse high-order tetrahedral meshes
https://dl.acm.org/doi/abs/10.1145/3450626.3459840
AUTHORS: Zhongshi Jiang, Ziyi Zhang, Yixin Hu, Teseo Schneider, Denis Zorin, Daniele Panozzo
HIGHLIGHT: We introduce a robust and automatic algorithm to convert linear triangle meshes with feature annotated into coarse tetrahedral meshes with curved elements.

124, TITLE: Medial IPC: accelerated incremental potential contact with medial elastics
https://dl.acm.org/doi/abs/10.1145/3450626.3459753
AUTHORS: Lei Lan, Yin Yang, Danny Kaufman, Junfeng Yao, Minchen Li, Chenfanfu Jiang
HIGHLIGHT: We propose a framework of efficient nonlinear deformable simulation with both fast continuous collision detection and robust collision resolution.

125, TITLE: A time-independent deformer for elastic contacts
https://dl.acm.org/doi/abs/10.1145/3450626.3459879
AUTHORS: Camille Brunel, Pierre Bénard, Gaël Guennebaud
HIGHLIGHT: We present a purely geometric, time-independent deformer resolving local contacts between elastic objects, including self-collisions between adjacent parts of the same object that often occur in character skinning animation.

126, TITLE: Constrained projective dynamics: real-time simulation of deformable objects with energy-momentum conservation
https://dl.acm.org/doi/abs/10.1145/3450626.3459878
AUTHORS: Min Hyung Kee, Kiwon Um, Wooseok Jeong, Junghyun Han
HIGHLIGHT: This paper proposes a novel energy-momentum conserving integration method.

127, TITLE: Stream-guided smoke simulations
https://dl.acm.org/doi/abs/10.1145/3450626.3459846
AUTHORS: Syuhei Sato, Yoshinori Dobashi, Theodore Kim
HIGHLIGHT: Thus, we propose a novel, efficient method that formulates fluid guidance as a minimization problem in stream function space.

128, TITLE: Volumetric appearance stylization with stylizing kernel prediction network
https://dl.acm.org/doi/abs/10.1145/3450626.3459799
AUTHORS: Jie Guo, Mengtian Li, Zijing Zong, Yuntao Liu, Jingwu He, Yanwen Guo, Ling-Qi Yan
HIGHLIGHT: This paper aims to efficiently construct the volume of heterogeneous single-scattering albedo for a given medium that would lead to desired color appearance.

129, TITLE: Fire in paradise: mesoscale simulation of wildfires
https://dl.acm.org/doi/abs/10.1145/3450626.3459954
AUTHORS: Torsten Hädrich, Daniel T. Banuti, Wojtek Pa?ubicki, Sören Pirk, Dominik L. Michels
HIGHLIGHT: In this paper we present a novel method for simulating wildfires with the goal to realistically capture the combustion process of individual trees and the resulting propagation of fires at the scale of forests.

130, TITLE: Neural scene graph rendering
https://dl.acm.org/doi/abs/10.1145/3450626.3459848
AUTHORS: Jonathan Granskog, Till N. Schnabel, Fabrice Rousselle, Jan Novák

HIGHLIGHT: We present a neural scene graph---a modular and controllable representation of scenes with elements that are learned from data.

131, TITLE: Orienting point clouds with dipole propagation
https://dl.acm.org/doi/abs/10.1145/3450626.3459835
AUTHORS: Gal Metzer, Rana Hanocka, Denis Zorin, Raja Giryes, Daniele Panozzo, Daniel Cohen-Or
HIGHLIGHT: In this work, we introduce a novel approach for establishing a globally consistent normal orientation for point clouds.

132, TITLE: HodgeNet: learning spectral geometry on triangle meshes
https://dl.acm.org/doi/abs/10.1145/3450626.3459797
AUTHORS: Dmitriy Smirnov, Justin Solomon
HIGHLIGHT: As an alternative, we present a technique for learning from meshes built from standard geometry processing modules and operations.

133, TITLE: Eliminating topological errors in neural network rotation estimation using self-selecting ensembles
https://dl.acm.org/doi/abs/10.1145/3450626.3459882
AUTHORS: Sitao Xiang
HIGHLIGHT: We propose the self-selecting ensemble, a topologically motivated approach, where the network makes multiple predictions and assigns weights to them.

134, TITLE: Mechanics-aware deformation of yarn pattern geometry
https://dl.acm.org/doi/abs/10.1145/3450626.3459816
AUTHORS: Georg Sperl, Rahul Narain, Chris Wojtan
HIGHLIGHT: We propose a method to animate yarn-level cloth geometry on top of an underlying deforming mesh in a mechanics-aware fashion.

135, TITLE: GPU-based simulation of cloth wrinkles at submillimeter levels
https://dl.acm.org/doi/abs/10.1145/3450626.3459787
AUTHORS: Huamin Wang
HIGHLIGHT: In this paper, we study physics-based cloth simulation in a very high resolution setting, presumably at submillimeter levels with millions of vertices, to meet perceptual precision of our human eyes.

136, TITLE: Codimensional incremental potential contact
https://dl.acm.org/doi/abs/10.1145/3450626.3459767
AUTHORS: Minchen Li, Danny M. Kaufman, Chenfanfu Jiang
HIGHLIGHT: Extending the IPC model to thin structures poses new challenges in computing strain, modeling thickness and determining collisions. To address these challenges we propose three corresponding contributions.

137, TITLE: Pareto gamuts: exploring optimal designs across varying contexts
https://dl.acm.org/doi/abs/10.1145/3450626.3459750
AUTHORS: Liane Makatura, Minghao Guo, Adriana Schulz, Justin Solomon, Wojciech Matusik
HIGHLIGHT: In this paper, we formulate a framework for variable-context multi-objective optimization.

138, TITLE: Optimizing UI layouts for deformable face-rig manipulation
https://dl.acm.org/doi/abs/10.1145/3450626.3459842
AUTHORS: Joonho Kim, Karan Singh
HIGHLIGHT: We propose the automatic creation of such in-situ UI control layouts.

139, TITLE: DAG amendment for inverse control of parametric shapes
https://dl.acm.org/doi/abs/10.1145/3450626.3459823
AUTHORS: Élie Michel, Tamy Boubekeur
HIGHLIGHT: In this paper, we introduce an amendment process of the underlying direct acyclic graph (DAG) of a parametric shape.

140, TITLE: Designing actuation systems for animatronic figures via globally optimal discrete search
https://dl.acm.org/doi/abs/10.1145/3450626.3459867
AUTHORS: Simon Huber, Roi Poranne, Stelian Coros
HIGHLIGHT: We present an algorithmic approach to designing animatronic figures - expressive robotic characters whose movements are driven by a large number of actuators.

141, TITLE: NeuMIP: multi-resolution neural materials
https://dl.acm.org/doi/abs/10.1145/3450626.3459795
AUTHORS: Alexandr Kuznetsov, Krishna Mullia, Zexiang Xu, MiloÅ¡ HaÅ¡an, Ravi Ramamoorthi
HIGHLIGHT: We propose NeuMIP, a neural method for representing and rendering a variety of material appearances at different scales.

142, TITLE: An inverse method for the exploration of layered material appearance
https://dl.acm.org/doi/abs/10.1145/3450626.3459857
AUTHORS: Mégane Bati, Pascal Barla, Romain Pacanowski
HIGHLIGHT: We introduce an inverse method that provides control over BRDF lobe properties of layered materials, while automatically retrieving compatible physical parameters.

143, TITLE: Transfer matrix based layered materials rendering
https://dl.acm.org/doi/abs/10.1145/3450626.3459859
AUTHORS: Joël Randrianandrasana, Patrick Callet, Laurent Lucas
HIGHLIGHT: In this paper, we address these limitations with an efficient solution based upon a transfer matrix approach which leverages the properties of the Henyey-Greenstein phase function.

144, TITLE: A gradient-based framework for 3D print appearance optimization
https://dl.acm.org/doi/abs/10.1145/3450626.3459844
AUTHORS: Thomas Klaus Nindel, TomáÅ¡ Iser, Tobias Rittig, Alexander Wilkie, Jaroslav K?ivánek
HIGHLIGHT: We propose to use differentiable volume rendering in a continuous material-mixture space, which leads to a framework that can be used as a general tool for optimising inkjet 3D printouts.

145, TITLE: Displaced signed distance fields for additive manufacturing
https://dl.acm.org/doi/abs/10.1145/3450626.3459827
AUTHORS: Alan Brunton, Lubna Abu Rmaileh
HIGHLIGHT: We propose displaced signed distance fields, an implicit shape representation to accurately, efficiently and robustly 3D-print finely detailed and smoothly curved surfaces at native device resolution.

146, TITLE: Geometry and tool motion planning for curvature adapted CNC machining
https://dl.acm.org/doi/abs/10.1145/3450626.3459837
AUTHORS: Michael Barto?, Michal Bizzarri, Florian Rist, Oleksii Sliusarenko, Helmut Pottmann
HIGHLIGHT: We aim at a high-quality surface finish, thereby reducing the need for hard-to-control post-machining processes such as grinding and polishing.

147, TITLE: MOCCA: modeling and optimizing cone-joints for complex assemblies
https://dl.acm.org/doi/abs/10.1145/3450626.3459680
AUTHORS: Ziqi Wang, Peng Song, Mark Pauly
HIGHLIGHT: We present a computational framework for modeling and optimizing complex assemblies using cone joints.

148, TITLE: QuanTaichi: a compiler for quantized simulations
https://dl.acm.org/doi/abs/10.1145/3450626.3459671
AUTHORS: Yuanming Hu, Jiafeng Liu, Xuanda Yang, Mingkuan Xu, Ye Kuang, Weiwei Xu, Qiang Dai, William T. Freeman, Frédo Durand
HIGHLIGHT: We present a compiler for physical simulation that can achieve both high performance and significantly reduced memory costs, by enabling flexible and aggressive quantization.

149, TITLE: Intersection-free rigid body dynamics
https://dl.acm.org/doi/abs/10.1145/3450626.3459802
AUTHORS: Zachary Ferguson, Minchen Li, Teseo Schneider, Francisca Gil-Ureta, Timothy Langlois, Chenfanfu Jiang, Denis Zorin, Danny M. Kaufman, Daniele Panozzo
HIGHLIGHT: We introduce the first implicit time-stepping algorithm for rigid body dynamics, with contact and friction, that guarantees intersection-free configurations at every time step.