Computer Graphics I
COMP.5460
NITHYA VASANTHA KUMAR
01689975

Source: ACM *Transactions on Graphics* (TOG)

1. *Interactive High-Quality Green-Screen Keying via Color Unmixing*

BiBteX:

@article{Aksoy:2016:IHG:2965650.2907940,

author = {Aksoy, Ya\u{g}iz and Aydin, Tun\c{c} Ozan and Pollefeys, Marc and Smoli\'{c}, Aljo\v{s}a},

title = {Interactive High-Quality Green-Screen Keying via Color Unmixing},

journal = {ACM Trans. Graph.},

issue_date = {September 2016},

volume = {35},

number = {5},

month = aug,

year = {2016},

issn = {0730-0301},

pages = {152:1--152:12},

articleno = {152},

numpages = {12},

url = {http://doi.acm.org/10.1145/2907940},

doi = {10.1145/2907940},

acmid = {2907940},

publisher = {ACM},

address = {New York, NY, USA},

keywords = {Green-screen keying, image matting, interactive segmentation, soft segmentation},

}

ACM Ref:

Yağiz Aksoy, Tunç Ozan Aydin, Marc Pollefeys, and Aljoša Smolić. 2016. Interactive High-Quality Green-Screen Keying via Color Unmixing. ACM Trans. Graph. 35, 5, Article 152 (August 2016), 12 pages. DOI: https://doi.org/10.1145/2907940

2. Real-time data driven deformation using kernel canonical correlation analysis

BiBteX:

```
@article{Feng:2008:RDD:1360612.1360690,
 author = {Feng, Wei-Wen and Kim, Byung-Uck and Yu, Yizhou},
 title = {Real-time Data Driven Deformation Using Kernel Canonical Correlation Analysis},
 journal = {ACM Trans. Graph.},
 issue_date = {August 2008},
 volume = {27},
 number = {3},
 month = aug,
 year = {2008},
 issn = {0730-0301},
 pages = {91:1--91:9},
 articleno = {91},
 numpages = {9},
 url = {http://doi.acm.org/10.1145/1360612.1360690},
 doi = {10.1145/1360612.1360690},
 acmid = {1360690},
 publisher = {ACM},
 address = {New York, NY, USA},
 keywords = {Poisson equation, animation, regression, skinning},
}
```

ACM Ref:

Wei-Wen Feng, Byung-Uck Kim, and Yizhou Yu. 2008. Real-time data driven deformation using kernel canonical correlation analysis. ACM Trans. Graph. 27, 3, Article 91 (August 2008), 9 pages. DOI: https://doi.org/10.1145/1360612.1360690

NITHYA VASANTHA KUMAR
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Source: IEEE *Transactions on Visualization and Computer Graphics* (TVCG)

1. *Amplified Head Rotation in Virtual Reality and the Effects on 3D Search, Training Transfer, and Spatial Orientation*

BiBteX:

```
@ARTICLE{7547900,
author={E. D. Ragan and S. Scerbo and F. Bacim and D. A. Bowman},
journal={IEEE Transactions on Visualization and Computer Graphics},
title={Amplified Head Rotation in Virtual Reality and the Effects on 3D Search, Training Transfer, and Spatial Orientation},
year={2017},
volume={23},
number={8},
pages={1880-1895},
keywords={helmet mounted displays;virtual reality;3D environment;3D search;VR search task;VR systems;amplified head rotation;cybersickness;head movements;head-mounted display;physical rotations;seminatural physical view control;spatial orientation;surround-screen CAVE;training transfer;virtual reality;virtual turns;Games;Legged locomotion;Navigation;Three-dimensional displays;Training;Virtual reality;Visualization;3D interaction;Virtual reality;cybersickness;rotation amplification;search;spatial orientation},
doi={10.1109/TVCG.2016.2601607},
ISSN={1077-2626},
month={Aug},
```

Citation:

E. D. Ragan, S. Scerbo, F. Bacim and D. A. Bowman, "Amplified Head Rotation in Virtual Reality and the Effects on 3D Search, Training Transfer, and Spatial Orientation," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 23, no. 8, pp. 1880-1895, Aug. 1 2017.
doi: 10.1109/TVCG.2016.2601607
keywords: {helmet mounted displays;virtual reality;3D environment;3D search;VR search task;VR systems;amplified head rotation;cybersickness;head movements;head-mounted display;physical rotations;seminatural physical view control;spatial

orientation;surround-screen CAVE;training transfer;virtual reality;virtual turns;Games;Legged locomotion;Navigation;Three-dimensional displays;Training;Virtual reality;Visualization;3D interaction;Virtual reality;cybersickness;rotation amplification;search;spatial orientation},
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7547900&isnumber=7961285

2. *Global visualization and alignments of whole bacterial genomes*

BiBteX:

@ARTICLE{1207444,
author={Pak Chung Wong and Kwong Kwok Wong and H. Foote and J. Thomas},
journal={IEEE Transactions on Visualization and Computer Graphics},
title={Global visualization and alignments of whole bacterial genomes},
year={2003},
volume={9},
number={3},
pages={361-377},
keywords={biology computing;data visualisation;filters;genetics;image processing;microorganisms;digital image-processing filters;global visualization;nucleciticles;phenotypic changes;pixel enhancement techniques;pixel-based visualizations;versatile cost-effective analysis tool;whole bacterial genome alignments;Bioinformatics;Capacitive sensors;DNA;Data visualization;Digital images;Genomics;Humans;Information analysis;Microorganisms;Sequences},
doi={10.1109/TVCG.2003.1207444},
ISSN={1077-2626},
month={July},}

Citation:

Pak Chung Wong, Kwong Kwok Wong, H. Foote and J. Thomas, "Global visualization and alignments of whole bacterial genomes," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 9, no. 3, pp. 361-377, July-Sept. 2003.
doi: 10.1109/TVCG.2003.1207444
keywords: {biology computing;data visualisation;filters;genetics;image processing;microorganisms;digital image-processing filters;global visualization;nucleciticles;phenotypic changes;pixel enhancement techniques;pixel-based visualizations;versatile cost-effective analysis tool;whole bacterial genome alignments;Bioinformatics;Capacitive sensors;DNA;Data visualization;Digital images;Genomics;Humans;Information analysis;Microorganisms;Sequences},
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1207444&isnumber=27179

NITHYA VASANTHA KUMAR
01689975

IEEE *Computer Graphics and Applications* (CG&A)

1. *The Emerging Genre of Data Comics*

BiBteX:

```
@ARTICLE{7912272,
author={B. Bach and N. H. Riche and S. Carpendale and H. Pfister},
journal={IEEE Computer Graphics and Applications},
title={The Emerging Genre of Data Comics},
year={2017},
volume={37},
number={3},
pages={6-13},
keywords={computer graphics;humanities;data comics;visual storytelling;Art;Computer graphics;computer graphics;data comics;data visualization;information visualization;visual storytelling},
doi={10.1109/MCG.2017.33},
ISSN={0272-1716}, }
```

Citation:

B. Bach, N. H. Riche, S. Carpendale and H. Pfister, "The Emerging Genre of Data Comics," in *IEEE Computer Graphics and Applications*, vol. 37, no. 3, pp. 6-13, May-June 2017.
doi: 10.1109/MCG.2017.33
keywords: {computer graphics;humanities;data comics;visual storytelling;Art;Computer graphics;computer graphics;data comics;data visualization;information visualization;visual storytelling},
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7912272&isnumber=7912157

2. *Visualization viewpoints: beyond geovisualization*

BiBteX:

```
@ARTICLE{1652917,
author={M. J. Kraak},
journal={IEEE Computer Graphics and Applications},
title={Visualization viewpoints: beyond geovisualization},
year={2006},
```

volume={26},
number={4},
pages={6-9},
keywords={cartography;data visualisation;virtual reality;International Cartographic Association;cartographic community;data visualization viewpoint;geodata infrastructures;geovisualization;virtual environment;Cognition;Computer graphics;Conferences;Embedded computing;Geographic Information Systems;Military computing;Seminars;Statistics;Usability;Visualization;geographic information;geospatial data;geovisualization;visualization},
doi={10.1109/MCG.2006.74},
ISSN={0272-1716},
month={July},}

Citation:

M. J. Kraak, "Visualization viewpoints: beyond geovisualization," in *IEEE Computer Graphics and Applications*, vol. 26, no. 4, pp. 6-9, July-Aug. 2006.
doi: 10.1109/MCG.2006.74
keywords: {cartography;data visualisation;virtual reality;International Cartographic Association;cartographic community;data visualization viewpoint;geodata infrastructures;geovisualization;virtual environment;Cognition;Computer graphics;Conferences;Embedded computing;Geographic Information Systems;Military computing;Seminars;Statistics;Usability;Visualization;geographic information;geospatial data;geovisualization;visualization},
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1652917&isnumber=34643

Source: ACM SIGGRAPH *Computer Graphics*

1. ***Beyond points and beams: higher-dimensional photon samples for volumetric light transport***

BiBteX:

@article{Bitterli:2017:BPB:3072959.3073698,

author = {Bitterli, Benedikt and Jarosz, Wojciech},

title = {Beyond Points and Beams: Higher-dimensional Photon Samples for Volumetric Light Transport},

journal = {ACM Trans. Graph.},

issue_date = {July 2017},

volume = {36},

number = {4},

month = jul,

year = {2017},

issn = {0730-0301},

pages = {112:1--112:12},

articleno = {112},

numpages = {12},

url = {http://doi.acm.org/10.1145/3072959.3073698},

doi = {10.1145/3072959.3073698},

acmid = {3073698},

publisher = {ACM},

address = {New York, NY, USA},

keywords = {global illumination, light transport, participating media, photon beams, photon mapping},

}

Citation:

Benedikt Bitterli and Wojciech Jarosz. 2017. Beyond points and beams: higher-dimensional photon samples for volumetric light transport. ACM Trans. Graph. 36, 4, Article 112 (July 2017), 12 pages. DOI: https://doi.org/10.1145/3072959.3073698

2. ***Chromium: a stream-processing framework for interactive rendering on clusters***

BiBteX:

@inproceedings{Humphreys:2002:CSF:566570.566639,
author = {Humphreys, Greg and Houston, Mike and Ng, Ren and Frank, Randall and Ahern, Sean and Kirchner, Peter D. and Klosowski, James T.},
title = {Chromium: A Stream-processing Framework for Interactive Rendering on Clusters},
booktitle = {Proceedings of the 29th Annual Conference on Computer Graphics and Interactive Techniques},
series = {SIGGRAPH '02},
year = {2002},

isbn = {1-58113-521-1},
location = {San Antonio, Texas},
pages = {693--702},
numpages = {10},
url = {http://doi.acm.org/10.1145/566570.566639},
doi = {10.1145/566570.566639},
acmid = {566639},
publisher = {ACM},
address = {New York, NY, USA},
keywords = {cluster rendering, parallel rendering, remote graphics, scalable rendering, stream processing, tiled displays, virtual graphics},
}

Citation:

Greg Humphreys, Mike Houston, Ren Ng, Randall Frank, Sean Ahern, Peter D. Kirchner, and James T. Klosowski. 2002. Chromium: a stream-processing framework for interactive rendering on clusters. ACM Trans. Graph. 21, 3 (July 2002), 693-702. DOI=http://dx.doi.org/10.1145/566654.566639

Source: Computers and Graphics (C&G)

1. Patterns from photograph: Reverse-engineering developable products

BiBteX:

@article{FONDEVILLA20174,
title = "Patterns from photograph: Reverse-engineering developable products",
journal = "Computers & Graphics",
volume = "66",
pages = "4 - 13",
year = "2017",
note = "Shape Modeling International 2017",
issn = "0097-8493",
doi = "https://doi.org/10.1016/j.cag.2017.05.017",
url = "http://www.sciencedirect.com/science/article/pii/S0097849317300663",
author = "Amélie Fondevilla and Adrien Bousseau and Damien Rohmer and Stefanie Hahmann and Marie-Paule Cani",
keywords = "Single-view 3D reconstruction, Image-based modeling, Sketch-based modeling, Developable surfaces"
}

2. The remote application controller

BibTeX:

@article{MILLER2003605,
title = "The remote application controller",
journal = "Computers & Graphics",
volume = "27",
number = "4",
pages = "605 - 615",
year = "2003",
issn = "0097-8493",
doi = "https://doi.org/10.1016/S0097-8493(03)00104-3",
url = "http://www.sciencedirect.com/science/article/pii/S0097849303001043",
author = "James R. Miller",
keywords = "Distributed interaction techniques, Collaborative work environments"
}

Source: Computer Graphics Forum (CGF)

1. The shape variational autoencoder: A deep generative model of part-segmented 3D objects.

BiBteX:

@article{12462389020170801,
Abstract = {We introduce a generative model of part-segmented 3D objects: the shape variational auto-encoder (ShapeVAE). The ShapeVAE describes a joint distribution over the existence of object parts, the locations of a dense set of surface points, and over surface normals associated with these points. Our model makes use of a deep encoder-decoder architecture that leverages the part-decomposability of 3D objects to embed high-dimensional shape representations and sample novel instances. Given an input collection of part-segmented objects with dense point correspondences the ShapeVAE is capable of synthesizing novel, realistic shapes, and by performing conditional inference enables imputation of missing parts or surface normals. In addition, by generating both points and surface normals, our model allows for the use of powerful surface-reconstruction methods for mesh synthesis. We provide a quantitative evaluation of the ShapeVAE on shape-completion and test-set log-likelihood tasks and demonstra},
Author = {Nash, C. and Williams, C. K. I.},
ISSN = {01677055},
Journal = {Computer Graphics Forum},
Keywords = {Mathematical models, Shape analysis (Computational geometry), Three-dimensional imaging, Decoders & decoding, Numerical grid generation (Numerical analysis), Categories and Subject Descriptors (according to ACM CCS), I.3.5 [Computer Graphics]:

Computational Geometry and Object Modelling-},
Number = {5},
Pages = {1 - 12},
Title = {The shape variational autoencoder: A deep generative model of part-segmented 3D objects.},
Volume = {36},
URL =
{https://umasslowell.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=124623890&site=ehost-live},
Year = {2017},
}

2. *Hierarchical Convex Approximation of 3D Shapes for Fast Region Selection*

BiBteX:

@article{3452788520080701,
Abstract = {Given a 3D solid model S represented by a tetrahedral mesh, we describe a novel algorithm to compute a hierarchy of convex polyhedra that tightly enclose S. The hierarchy can be browsed at interactive speed on a modern PC and it is useful for implementing an intuitive feature selection paradigm for 3D editing environments. Convex parts often coincide with perceptually relevant shape components and, for their identification, existing methods rely on the boundary surface only. In contrast, we show that the notion of part concavity can be expressed and implemented more intuitively and efficiently by exploiting a tetrahedrization of the shape volume. The method proposed is completely automatic, and generates a tree of convex polyhedra in which the root is the convex hull of the whole shape, and the leaves are the tetrahedra of the input mesh. The algorithm proceeds bottom-up by hierarchically clustering tetrahedra into nearly convex aggregations, and the whole process is significantly fas},
Author = {Attene, Marco and Mortara, Michela and Spagnuolo, Michela and Falcidieno, Bianca},
ISSN = {01677055},
Journal = {Computer Graphics Forum},
Keywords = {Algorithms, Numerical grid generation (Numerical analysis), Surfaces (Geometry), Numerical solutions to boundary value problems, Convex functions, Geometry, I.3.5 [Computer Graphics]: Computational Geometry and Object Modeling - Object hierarchies},
Number = {5},
Pages = {1323 - 1332},
Title = {Hierarchical Convex Approximation of 3D Shapes for Fast Region Selection.},
Volume = {27},
URL =
{https://umasslowell.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=34527885&site=ehost-live},
Year = {2008},
}

NITHYA VASANTHA KUMAR
01689975

Source: Visual Computer

1. Generalized rational Bézier curves for the rigid body motion design

BiBteX:

```
@Article{Luo2016,
author="Luo, Zhongxuan
and Wang, Qian
and Fan, Xin
and Gao, Yaqi
and Shui, Panpan",
title="Generalized rational B{\'e}zier curves for the rigid body motion design",
journal="The Visual Computer",
year="2016",
month="Sep",
day="01",
volume="32",
number="9",
pages="1071--1084",
abstract="In this paper, we present a new method for the smooth interpolation of the orientations of a rigid body motion. The method is based on the geometrical Hermite interpolation in a hypersphere. However, the non-Euclidean structure of a sphere brings a great challenge to the interpolation problem. For this consideration and the requirements for practical application, we construct the spherical analogue of classical rational B{\'e}zier curves, called generalized rational B{\'e}zier curves. The new spherical curves are obtained using the generalized rational de Casteljau algorithm, which is a generalization of the classical rational de Casteljau algorithm to a hypersphere. The new method offers residual free parameters including shape parameters and weights, which guarantee the existence of the interpolant to arbitrary motion data and offer great flexibility for the shape design of the motion. Numerical examples show that our method is far better behaved according to the energy functional which is regarded as a measure of the motion shape.",
issn="1432-2315",
doi="10.1007/s00371-015-1173-0",
url="https://doi.org/10.1007/s00371-015-1173-0"
}
```

2. An inverse kinematics architecture enforcing an arbitrary number of strict priority levels

BiBteX:

@Article{Baerlocher2004,
author="Baerlocher, Paolo
and Boulic, Ronan",
title="An inverse kinematics architecture enforcing an arbitrary number of strict priority levels",
journal="The Visual Computer",
year="2004",
month="Aug",
day="01",
volume="20",
number="6",
pages="402--417",
abstract="An efficient inverse kinematics solver is a key element in applications targeting the on-line or off-line postural control of complex articulated figures. In the present paper we progressively describe the strategic components of a very general and robust inverse kinematics architecture. We then present an efficient recursive algorithm enforcing an arbitrary number of strict priorities to arbitrate the fulfillment of conflicting constraints. Due to its local nature, the moderate cost of the solution allows this architecture to run within an interactive environment. The algorithm is illustrated on the postural control of complex articulated figures. ",
issn="1432-2315",
doi="10.1007/s00371-004-0244-4",
url="https://doi.org/10.1007/s00371-004-0244-4"
}