COMP.5460 Computer Graphics 1

Journal Finder Assignment

Source: ACM Transactions on Graphics (TOG)

1. Understanding and Exploiting Object Interaction Landscapes

BibTeX:

```
@article{Pirk:2017:UEO:3087678.3083725,
 author = {Pirk, S\"{o}ren and Krs, Vojtech and Hu, Kaimo and Rajasekaran, Suren Deepak and Kang, Hao and Yoshiyasu, Yusuke and Benes, Bedrich and Guibas, Leonidas J.},
 title = {Understanding and Exploiting Object Interaction Landscapes},
 journal = {ACM Trans. Graph.},
 issue_date = {June 2017},
 volume = {36},
 number = {3},
 month = jun,
 year = {2017},
 issn = {0730-0301},
 pages = {31:1--31:14},
 articleno = {31},
 numpages = {14},
 url = {http://doi.acm.org.umasslowell.idm.oclc.org/10.1145/3083725},
 doi = {10.1145/3083725},
 acmid = {3083725},
 publisher = {ACM},
 address = {New York, NY, USA},
 keywords = {Object functionality analysis, affordance analysis, geometric modeling, object semantics, physical interactions, shape analysis},
}
```

ACM Ref:

Sören Pirk, Vojtech Krs, Kaimo Hu, Suren Deepak Rajasekaran, Hao Kang, Yusuke Yoshiyasu, Bedrich Benes, and Leonidas J. Guibas. 2017. Understanding and Exploiting Object Interaction Landscapes. ACM Trans. Graph. 36, 3, Article 31 (June 2017), 14 pages. DOI: https://doi-org.umasslowell.idm.oclc.org/10.1145/3083725

2. Variational mesh decomposition

Bibtex:

```
@article{Zhang:2012:VMD:2167076.2167079,
 author = {Zhang, Juyong and Zheng, Jianmin and Wu, Chunlin and Cai, Jianfei},
 title = {Variational Mesh Decomposition},
 journal = {ACM Trans. Graph.},
```

issue_date = {May 2012},
volume = {31},
number = {3},
month = jun,
year = {2012},
issn = {0730-0301},
pages = {21:1--21:14},
articleno = {21},
numpages = {14},
url = {http://doi.acm.org.umasslowell.idm.oclc.org/10.1145/2167076.2167079},
doi = {10.1145/2167076.2167079},
acmid = {2167079},
publisher = {ACM},
address = {New York, NY, USA},
keywords = {Laplacian matrix, Mumford-Shah model, Shape analysis, mesh segmentation, primal-dual method, spectral attribute},
}

Acm ref:

Juyong Zhang, Jianmin Zheng, Chunlin Wu, and Jianfei Cai. 2012. Variational mesh decomposition. ACM Trans. Graph. 31, 3, Article 21 (June 2012), 14 pages. DOI: https://doi-org.umasslowell.idm.oclc.org/10.1145/2167076.2167079

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

1. TOD-Tree: Task-Overlapped Direct Send Tree Image Compositing for Hybrid MPI Parallelism and GPUs

Bibtex:

@ARTICLE{7433468,
author={A. V. P. Grosset and M. Prasad and C. Christensen and A. Knoll and C. Hansen},
journal={IEEE Transactions on Visualization and Computer Graphics},
title={TOD-Tree: Task-Overlapped Direct Send Tree Image Compositing for Hybrid MPI Parallelism and GPUs},
year={2017},
volume={23},
number={6},
pages={1677-1690},
keywords={application program interfaces;graphics processing units;image processing;message passing;rendering (computer graphics);tree data structures;CPU-only supercomputers;CUDA kernels;GPU direct RDMA;GPU-accelerated supercomputers;GPU-based image compositing algorithm;IceT library;Piz Daint GPU-accelerated supercomputer;TOD-tree;binary-swap;communication avoidance;hybrid MPI parallelism;hybrid OpenMP/MPI setting;interactive visualization;internode GPU communication;overlapping communication;radix-k;rendering;task-overlapped direct send

tree image compositing;Data visualization;Graphics processing units;Loading;Message systems;Parallel processing;Rendering (computer graphics);Supercomputers;Distributed volume rendering;image compositing;parallel processing},
doi={10.1109/TVCG.2016.2542069},
ISSN={1077-2626},
month={June},}

Citation:

A. V. P. Grosset, M. Prasad, C. Christensen, A. Knoll and C. Hansen, "TOD-Tree: Task-Overlapped Direct Send Tree Image Compositing for Hybrid MPI Parallelism and GPUs," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 23, no. 6, pp. 1677-1690, June 1 2017.
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7433468&isnumber=7914798

2. Multithreaded Hybrid Feature Tracking for Markerless Augmented Reality

Bibtex:

@ARTICLE{4653490,
author={T. Lee and T. Hollerer},
journal={IEEE Transactions on Visualization and Computer Graphics},
title={Multithreaded Hybrid Feature Tracking for Markerless Augmented Reality},
year={2009},
volume={15},
number={3},
pages={355-368},
keywords={augmented reality;feature extraction;image sequences;user interfaces;image features;markerless augmented reality;markerless camera tracking;multithreaded hybrid feature tracking;optical flow;real-time system architecture;unprepared tabletop;user interaction;Augmented reality;Cameras;Computer architecture;Computer vision;Image motion analysis;Layout;Optical computing;Optical detectors;Real time systems;Rendering (computer graphics);Scene Analysis;Virtual reality;Artificial Intelligence;Computer Graphics;Computer Simulation;Hand;Humans;Imaging, Three-Dimensional;Models, Biological;Pattern Recognition, Automated;User-Computer Interface},
doi={10.1109/TVCG.2008.190},
ISSN={1077-2626},
month={May},}

Citation:

T. Lee and T. Hollerer, "Multithreaded Hybrid Feature Tracking for Markerless Augmented Reality," in *IEEE Transactions on Visualization and Computer Graphics*, vol. 15, no. 3, pp. 355-368, May-June 2009.
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4653490&isnumber=4800283

Source:IEEE Computer Graphics and Applications (CG&A)

1. FabSquare: Fabricating Photopolymer Objects by Mold 3D Printing and UV Curing

Bibtex:

@ARTICLE{7912271,
author={V. Babaei and J. Ramos and Y. Lu and G. Webster and W. Matusik},
journal={IEEE Computer Graphics and Applications},
title={FabSquare: Fabricating Photopolymer Objects by Mold 3D Printing and UV Curing},
year={2017},
volume={37},
number={3},
pages={34-42},
keywords={curing;moulding;optical polymers;polymerisation;solidification;three-dimensional printing;ultraviolet radiation effects;3D printed mold;FabSquare system;UV curing;UV-transparent materials;fluid content solidification;mold 3D printing;photopolymer molding;photopolymer object fabrication;polymerization;Fabrication;Injection molding;Printers;Three-dimensional displays;Three-dimensional printing;3D printing;computer graphics;injection molding;rapid prototyping},
doi={10.1109/MCG.2017.37},
ISSN={0272-1716},
month={May},}

Citation:

V. Babaei, J. Ramos, Y. Lu, G. Webster and W. Matusik, "FabSquare: Fabricating Photopolymer Objects by Mold 3D Printing and UV Curing," in IEEE Computer Graphics and Applications, vol. 37, no. 3, pp. 34-42, May-June 2017.
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7912271&isnumber=7912157

2. Deriving linear transformations in three dimensions

Bibtex:

@ARTICLE{1198264,
author={R. Goldman},
journal={IEEE Computer Graphics and Applications},
title={Deriving linear transformations in three dimensions},
year={2003},

volume={23},
number={3},
pages={66-71},
keywords={algebra;computational geometry;computer graphics;3D geometry;3D graphics pipeline;elementary algebraic problems;linear transformations;Computer graphics;Equations;Geometry;Pipelines;Reflection;Vectors},
doi={10.1109/MCG.2003.1198264},
ISSN={0272-1716},
month={May},}

Citation:

R. Goldman, "Deriving linear transformations in three dimensions," in *IEEE Computer Graphics and Applications*, vol. 23, no. 3, pp. 66-71, May-June 2003.
URL: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1198264&isnumber=26969

Source: ACM SIGGRAPH Computer Graphics (conference proceedings only, published as an ACM TOG issue)

1. Improving the GJK Algorithm for Faster and More Reliable Distance Queries Between Convex Objects

Bibtex:

@article{Montanari:2017:IGA:3087678.3083724,
 author = {Montanari, Mattia and Petrinic, Nik and Barbieri, Ettore},
 title = {Improving the GJK Algorithm for Faster and More Reliable Distance Queries Between Convex Objects},
 journal = {ACM Trans. Graph.},
 issue_date = {June 2017},
 volume = {36},
 number = {3},
 month = jun,
 year = {2017},
 issn = {0730-0301},
 pages = {30:1--30:17},
 articleno = {30},
 numpages = {17},
 url = {http://doi.acm.org.umasslowell.idm.oclc.org/10.1145/3083724},
 doi = {10.1145/3083724},
 acmid = {3083724},
 publisher = {ACM},
 address = {New York, NY, USA},
 keywords = {Distance measurement, Gilbert-Johnson-Keerthi algorithm, collision detection},
}

Acm ref:

Mattia Montanari, Nik Petrinic, and Ettore Barbieri. 2017. Improving the GJK Algorithm for Faster and More Reliable Distance Queries Between Convex Objects. ACM Trans. Graph. 36, 3, Article 30 (June 2017), 17 pages. DOI: https://doi-org.umasslowell.idm.oclc.org/10.1145/3083724

2. Deformable object animation using reduced optimal control

Bibtex:

```
@inproceedings{Barbic:2009:DOA:1576246.1531359,
 author = {Barbi\v{c}, Jernej and da Silva, Marco and Popovi\'{c}, Jovan},
 title = {Deformable Object Animation Using Reduced Optimal Control},
 booktitle = {ACM SIGGRAPH 2009 Papers},
 series = {SIGGRAPH '09},
 year = {2009},
 isbn = {978-1-60558-726-4},
 location = {New Orleans, Louisiana},
 pages = {53:1--53:9},
 articleno = {53},
 numpages = {9},
 url = {http://doi.acm.org.umasslowell.idm.oclc.org/10.1145/1576246.1531359},
 doi = {10.1145/1576246.1531359},
 acmid = {1531359},
 publisher = {ACM},
 address = {New York, NY, USA},
 keywords = {control, deformations, keyframes, model reduction, space-time},
}

@article{Barbic:2009:DOA:1531326.1531359,
 author = {Barbi\v{c}, Jernej and da Silva, Marco and Popovi\'{c}, Jovan},
 title = {Deformable Object Animation Using Reduced Optimal Control},
 journal = {ACM Trans. Graph.},
 issue_date = {August 2009},
 volume = {28},
 number = {3},
 month = jul,
 year = {2009},
 issn = {0730-0301},
 pages = {53:1--53:9},
 articleno = {53},
 numpages = {9},
 url = {http://doi.acm.org.umasslowell.idm.oclc.org/10.1145/1531326.1531359},
 doi = {10.1145/1531326.1531359},
 acmid = {1531359},
 publisher = {ACM},
 address = {New York, NY, USA},
 keywords = {control, deformations, keyframes, model reduction, space-time},
}
```

Amc ref:

Jernej Barbič, Marco da Silva, and Jovan Popović. 2009. Deformable object animation using reduced optimal control. ACM Trans. Graph. 28, 3, Article 53 (July 2009), 9 pages. DOI: https://doi-org.umasslowell.idm.oclc.org/10.1145/1531326.1531359

Jernej Barbič, Marco da Silva, and Jovan Popović. 2009. Deformable object animation using reduced optimal control. In ACM SIGGRAPH 2009 papers(SIGGRAPH '09), Hugues Hoppe (Ed.). ACM, New York, NY, USA, Article 53, 9 pages. DOI: https://doi-org.umasslowell.idm.oclc.org/10.1145/1576246.1531359

Source: Computers and Graphics (C&G)

1. Art-directed water color stylization of 3D animations in real-time

Bibtex:

@article{MONTESDEOCA201760,
title = "Art-directed watercolor stylization of 3D animations in real-time",
journal = "Computers & Graphics",
volume = "65",
pages = "60 - 72",
year = "2017",
issn = "0097-8493",
doi = "https://doi.org/10.1016/j.cag.2017.03.002",
url = "http://www.sciencedirect.com/science/article/pii/S0097849317300316",
author = "S.E. Montesdeoca and H.S. Seah and H.-M. Rall and D. Benvenuti",
keywords = "Watercolor, NPR, Expressive rendering, Real-time, Direct stylization, Object-space"
}

Citation:

S.E. Montesdeoca, H.S. Seah, H.-M. Rall, D. Benvenuti,
Art-directed watercolor stylization of 3D animations in real-time,
Computers & Graphics,
https://doi.org/10.1016/j.cag.2017.03.002.
(http://www.sciencedirect.com/science/article/pii/S0097849317300316)

2. A 2D–3D visualization support for human-centered rule mining

Bibtex:

@article{BLANCHARD2007350,
title = "A 2D–3D visualization support for human-centered rule mining",
journal = "Computers & Graphics",
volume = "31",
number = "3",
pages = "350 - 360",
year = "2007",
issn = "0097-8493",
doi = "https://doi.org/10.1016/j.cag.2007.01.026",
url = "http://www.sciencedirect.com/science/article/pii/S009784930700057X",
author = "Julien Blanchard and Bruno Pinaud and Pascale Kuntz and Fabrice Guillet",
keywords = "Knowledge discovery in databases, Association rules, Interactive visualization, Interactive mining, Rule focusing"
}

Citation:

Julien Blanchard, Bruno Pinaud, Pascale Kuntz, Fabrice Guillet,
A 2D–3D visualization support for human-centered rule mining,
Computers & Graphics,
https://doi.org/10.1016/j.cag.2007.01.026.

(http://www.sciencedirect.com/science/article/pii/S009784930700057X)
Keywords: Knowledge discovery in databases; Association rules; Interactive visualization; Interactive mining; Rule focusing

Source: Computers Graphics Forum(CGF)

1. Global Feature Tracking and Similarity Estimation in Time-Dependent Scalar Fields

Bibtex:

@article{12391010520170601,
Abstract = {We present an algorithm for tracking regions in time-dependent scalar fields that uses global knowledge from all time steps for determining the tracks. The regions are defined using merge trees, thereby representing a hierarchical segmentation of the data in each time step. The similarity of regions of two consecutive time steps is measured using their volumetric overlap and a histogram difference. The main ingredient of our method is a directed acyclic graph that records all relevant similarity information as follows: the regions of all time steps are the nodes of the graph, the edges represent possible short feature tracks between consecutive time steps, and the edge weights are given by the similarity of the connected regions. We compute a feature track as the global solution of a shortest path problem in the graph. We use these results to steer the - to the best of our knowledge - first algorithm for spatio-temporal feature similarity estimation. Our algorithm works for 2D and 3D },
Author = {Saikia, H. and Weinkauf, T.},
ISSN = {01677055},
Journal = {Computer Graphics Forum},
Keywords = {SCALAR field theory, SPATIAL data infrastructures, DIRECTED acyclic

graphs, TOPOLOGY, MORSE theory},
Number = {3},
Pages = {1 - 11},
Title = {Global Feature Tracking and Similarity Estimation in Time-Dependent Scalar Fields.},
Volume = {36},
URL = {https://umasslowell.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=123910105&site=ehost-live},
Year = {2017},
}

2. Texture Synthesis using Exact Neighbourhood Matching

Bibtex:

@article{2512997120070601,
Abstract = {In this paper we present an elegant pixel-based texture synthesis technique that is able to generate visually pleasing results from source textures of both stochastic and structured nature. Inspired by the observation that the most common artifacts that occur when synthesizing textures are high-frequency discontinuities, our technique tries to avoid these artifacts by forcing at least one of the direct neighboring pixels in each causal neighborhood to match within a predetermined threshold. This does not only avoid deterioration of the visual quality, but also results in faster synthesis timings. We demonstrate our technique on a variety of stochastic and structured textures. [ABSTRACT FROM AUTHOR]},
Author = {Sabha, M. and Peers, P. and Dutr, P.},
ISSN = {01677055},
Journal = {Computer Graphics Forum},
Keywords = {PIXELS, TEXTURE mapping, IMAGE processing, MARKOV random fields, COMPUTER graphics, color, I.3.3 Computer Graphics: Picture/Image Generation, I.3.7 Computer Graphics, Markov Random Field, pixel-based techniques, shading, shadowing, Texture, texture synthesis, Three-Dimensional Graphics and Realism},
Number = {2},
Pages = {131 - 142},
Title = {Texture Synthesis using Exact Neighborhood Matching.},
Volume = {26},
URL = {https://umasslowell.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=25129971&site=ehost-live},
Year = {2007},
}

Source: Visual Computer

1. Adaptive rendering based on a weighted mixed-order estimator

Bibtex:

@Article{Yuan2017,
author="Yuan, Hongliang
and Zheng, Changwen",
title="Adaptive rendering based on a weighted mixed-order estimator",
journal="The Visual Computer",
year="2017",
month="Jun",
day="01",
volume="33",
number="6",
pages="695--704",
abstract="In this paper, we propose a novel adaptive rendering method to robustly handle noise artifacts and outliers of Monte Carlo ray tracing by combining the Nadaraya--Watson and robust local linear estimators while efficiently preserving fine details. Our method first constructs a sparse robust local linear estimator in feature space (normal,texture,etc.), while also removing spike noise. Then, we utilize the Nadaraya--Watson estimator to filter the outlier-free image. We generate the final image by interpolating the values of each estimator at each pixel with weights that are inversely proportional to the estimated mean squared errors. Lastly, we distribute additional samples to the regions with higher estimated mean squared errors if sampling budget remains. We have demonstrated that our estimator outperforms previous methods visually and numerically.",
issn="1432-2315",
doi="10.1007/s00371-017-1381-x",
url="https://doi.org/10.1007/s00371-017-1381-x"
}

2. Enabling cuts on multiresolution representation

Bibtex:

@Article{Ganovelli2001,
author="Ganovelli, F.
and Cignoni, P.
and Montani, C.
and Scopigno, R.",
title="Enabling cuts on multiresolution representation",
journal="The Visual Computer",
year="2001",
month="Jun",
day="01",
volume="17",
number="5",
pages="274--286",
abstract="Multiresolution representations are widely used in many visualization contexts and applications, since they provide optimal management of the data representation by using at each time instant a level of detail most appropriate for the application requirements. Unfortunately, current solutions do not allow the topology of the object to be changed, and this tends to prevent its adoption in applications where topological changes are needed, such as virtual surgery applications. By extending a known multiresolution model based on simplicial complexes, we develop a new approach which supports dynamic topological

modifications of the represented object without greatly increasing the representation complexity. ",
issn="1432-2315",
doi="10.1007/s003710100098",
url="https://doi.org/10.1007/s003710100098"
}