Biographical Sketch - Oliver Cossairt

ollie@eecs.northwestern.edu

Professional Preparation

1. Bachelor of Science, Physics, May 2001,
   Evergreen State College, Olympia, Washington.
2. M.S., Department of Media Arts and Sciences, August 2003,
   Massachusetts Institute of Technology, Cambridge, Massachusetts.
3. Ph.D., Department of Computer Science, October 2011,
   Columbia University, New York City, New York.
4. Postdoctoral Researcher, Computational Imaging, November 2011 – June 2012,
   Columbia University, New York City, New York.

Industry Positions

1. Software/Optical Engineer, **Actuality Systems Inc.**, Burlington, Massachusetts, August 2003 – May 2006

   - Manager of research team for $2 Million NIST funded program developing prototype Holographic TV.
   - Invention of several novel 3D displays and related technology, leading to four granted patents and five patents pending.

Academic Appointments

1. Lisa Wisner-Slivka and Benjamin Slivka Junior Professor of Computer Science,
   Northwestern University, Evanston IL, Sep 2012-Sep 2015.
2. Assistant Professor of Electrical Engineering and Computer Science,
   Northwestern University, Evanston IL, Sep 2015-present.
3. Texas Instruments Distinguished Visiting Professor, Jan 2016 – April 2016,
   Rice University, Houston, Texas.

Awards and Honors

- **AAAM MUSE Award**: *Investigating an Ancient Mummy with X-ray Imaging and Augmented Reality*, with NU-ACCESS and Block Museum of Art, 4/6/2018.
- **NSF CAREER Award**, 2/1/2015.
- **3M Non-Tenured Faculty Award,** 1/30/17**.**
- **Honorable Mention,** "*Coherent inverse scattering via transmission matrices,*" IEEE International Conference on Computational Photography (ICCP), 2017.
- **Honorable Mention**: "*Digital Refocusing with Incoherent Holography*", IEEE International Conference on Computational Photography (ICCP), 2014.
- **Best Paper Award**: "*Spectral Focal Sweep: Extended Depth of Field from Chromatic Aberrations*", IEEE International Conference on Computational Photography (ICCP), Mar 2010.

Journal Publications

1. F. Li, H. Chen, A. Pediredla, C.K. Yeh, K. He, A. Veeraraghavan, and O. Cossairt, "*CS-ToF: High-resolution compressive time-of-flight imaging*", Optics Express, 25(25) 31096-31110, 2017.
2. E. Pouyet, N. Rohani, A. Katsaggelos, O. Cossairt, & M. Walton, "*Innovative data reduction and visualization strategy for hyperspectral imaging datasets using t-SNE approach,*" Pure and Applied Chemistry, 2018 (accepted).

3. D. Gursoy, Y. P. Hong, K. He, K. Hujsak, S. Yoo, S. Chen, Y Li, L. Miller, Y. Chu, K. He, O. Cossairt, A. Katsaggelos, C. Jacobsen, *"Rapid alignment of x-ray and electron nanotomography data using joint iterative reconstruction and reprojection,"* Nature Scientific Reports, 2017.

4. F. Li, J. Yablon, A. Velten, M. Gupta, O. Cossairt, *"High depth resolution range imaging with multiple-wavelength superheterodyne interferometry using 1550-nm lasers."* OSA Applied Optics, 2017 (accepted).

5. J. Holloway, Y. Wu, M.K. Sharma, O. Cossairt, and A. Veeraraghavan, "*SAVI: Synthetic Apertures for long-range, sub-diffraction Visible Imaging Using Fourier Ptychography*," Science Advances, 14 April 2017.

6. E. Pouyet, S. Devine, T. Grafakos, R. Kieckhefer, J. Salvant, L. Smieska, A. Woll, A. Katsaggelos, O. Cossairt, M. Walton, "*Revealing the biography of a hidden medieval manuscript using synchrotron and conventional imaging techniques"*, Analytica Chimica Acta, Volume 982, pp. 20-30 (2017).

7. Z.Wang, L. Spinoulas, K. He, L. Tian, O. Cossairt, A. K. Katsaggelos, and H. Chen, "*Compressive holographic video*", OSA Optics Express, 25 (1) 250-262 (2017).

8. D. Ryu, Z. Wang, K. He, G. Zheng, R. Horstmeyer, and O. Cossairt, *"Subsampled phase retrieval for temporal resolution enhancement in lensless on-chip holographic video*", OSA Biomedical Optics Express, 8 (3) 1981-1995 (2017).

9. Q. Dai, E. Pouyet, O. Cossairt, M. Walton, and A. K. Katsaggelos, "*Spatial-Spectral Representation for X-Ray Fluorescence Image Super-Resolution*", in IEEE Transactions on Computational Imaging, 3, (3), 432-444, (2017).

10. X. Huang, E. Uffelman, O. Cossairt, M. Walton, A. Katsaggelos, *"Computational Imaging for Cultural Heritage,"* in IEEE Signal Processing Magazine, vol. 33, no. 5, pp. 130-138, Sept. 2016.

11. J. Holloway, M.S. Asif, M.K. Sharma, N. Matsuda, R. Horstmeyer, O. Cossairt, and A. Veeraraghavan, "*Toward Long Distance, Sub-diffraction Imaging Using Coherent Camera Arrays,*" in IEEE Transactions on Computational Imaging, vol. 2, no. 3, pp. 251-265, Sept. 2016.

12. K. He, M. Kumar, O. Cossairt, "*High Dynamic Range Coherent Imaging Using Compressed Sensing*," Optics Express, Opt. Express 23, 30904-30916 (2015).

13. R. Koller, L. Schmid, N. Matsuda, T. Niederberger, L. Spinoulas, O. Cossairt, G. Schuster, and A. K. Katsaggelos, *"High Spatio-Temporal Resolution Video with Compressed Sensing,"* Optics Express 23, 15992-16007 (2015).

14. M. Ganio, J. Salvant, J. Williams, L. Lee, O. Cossairt, & M. Walton, "*Investigating the use of Egyptian blue in Roman Egyptian portraits and panels from Tebtunis, Egypt."* Applied Physics A, 1-9, 2015.

15. Kaushik Mitra, Ashok Veeraraghavan, and Oliver Cossairt, "*Performance Analysis of Computational Imaging Systems and its Practical Implications*", IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), May 2013.

16. Oliver Cossairt, Mohit Gupta, and Shree K. Nayar, *"When Does Computational Imaging Improve Performance?",* IEEE transactions on Image Processing (TIP), May 2012.

17. Oliver Cossairt, Daniel Miau, and Shree K. Nayar, "*A Scaling Law for Computational Imaging*", Journal of the Optical Sciences of America (JOSA), Sep 2011.

18. Oliver Cossairt, Changyin Zhou, and Shree K. Nayar, "*Diffusion Coded Photography for Extended Depth of Field",* ACM Transactions on Graphics (Proc. of SIGGRAPH), Aug 2010.

19. Oliver Cossairt, Shree K. Nayar, Ravi Ramamoorthi, "*Light Field Transfer: Global Illumination between Real and Synthetic Objects",* ACM Transactions on Graphics (Proc. of SIGGRAPH), Aug 2008.

20. Oliver Cossairt, Joshua Napoli, Rick Dorval, Sam Hill, and Gregg Favalora, "*Spatial Occlusion-capable Multiview Volumetric Three-Dimensional Display"*, Applied Optics, Mar 2008.

Peer-Reviewed Conference Proceedings

1. F. Li, F. Willomitzer, P. Rangarajan, M. Gupta, A. Velten, O. Cossairt, "*Micro Resolution Time-of-Flight Imaging with Superheterodyne Interferometry*." IEEE International Conference of Computational Photography 2018 (Accepted).

2. S. Ghosh, Y. Nashed, A. Katsaggelos, and O. Cossairt, "*ADP: Automatic Differentiation Ptychography*," IEEE International Conference of Computational Photography 2018 (Accepted).

3. C. K. Yeh, F. Li, G. Pastorelli, M. Walton, A. K. Katsaggelos and O. Cossairt, Shape-from-Shifting: "*Uncalibrated Photometric Stereo with a Mobile Device*", IEEE International Conference on eScience Workshop on High Throughput Digitization for Natural History Collections (BigDig) 2017.

4. **Honorable Mention**: C. A. Metzler, M. K. Sharma, S. Nagesh, R. G. Baraniuk, O. Cossairt and A. Veeraraghavan, "*Coherent inverse scattering via transmission matrices: Efficient phase retrieval algorithms and a public dataset*," 2017 IEEE International Conference on Computational Photography (ICCP), Stanford, CA, 2017, pp. 1-16.

5. A. K. Pediredla, M. Buttafava, A. Tosi, O. Cossairt and A. Veeraraghavan, "*Reconstructing rooms using photon echoes: A plane based model and reconstruction algorithm for looking around the corner*," 2017 IEEE International Conference on Computational Photography (ICCP), Stanford, CA, 2017, pp. 1-12.

6. A. K. Pediredla, N. Matsuda, O. Cossairt and A. Veeraraghavan, "Linear systems approach to identifying performance bounds in indirect imaging," *2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans, LA, 2017, pp. 6235-6239 (invited).

7. A. Kappeler, S. Ghosh, J. Holloway, O. Cossairt, A. Katsaggelos, "*PtychNet: CNN based Fourier Ptychography***", IEEE Conference on Image Processing (ICIP), 2017 (accepted).

8. O. Cossairt, K. He, R. Shang, N. Matsuda, M.Sharma, X. Huang, A. Katsaggelos, L. Spinoulas and S. Yoo, *"Compressive Reconstruction for 3D Incoherent Holographic Microscopy,"*, IEEE International Conference on Image Processing (ICIP), invited, 2016.

9. Q. Dai, E. Pouyet, O. Cossairt, M. Walton, A. Katsaggelos, *"X-Ray Fluorescence Image Super-Resolution Using Dictionary Learning,"* IEEE Image and Video and Multimedia Signal Processing Workshop (IVMSP), invited, 2016.

10. N. Rohani, J. Salvant, S. Bahaadini, O. Cossairt, M. Walton, J. William, A. Katsaggelos, *"Automatic Pigment Identification on Roman Egyptian Paintings using Sparse Modeling of Hyperspectral Images,"* European Signal Processing Conference (EUSIPCO), accepted, 2016.

11. Nathan Matsuda, Oliver Cossairt, and Mohit Gupta, "*MC3D: Motion Contrast 3D Scanning,*" IEEE International Conference on Computational Photography (ICCP), April 2015.

12. L. Spinoulas, O. Cossairt and A. K. Katsaggelos, *"Sampling Optimization for On-Chip Compressive Video,"* IEEE Conference on Image Processing (ICIP), invited, 2015.

13. L. Spinoulas, K. He, O. Cossairt and A. K. Katsaggelos, *"Video Compressive Sensing With On-Chip Programmable Subsampling,"* Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops (CCD), pp. 49-57, 2015.

14. O. Cossairt, X. Huang, N. Matsuda, J. Tumblin, A. Katsaggelos, D. Kronkite, G. Bearman, H. Stratis, M. Broadway, M. Walton, *"Surface Shape Studies of the Art of Paul Gauguin"*, Digital Heritage Granada Conference 2015.

15. X. Huang, M. Walton, G. Bearman and O. Cossairt, *"Near Light Correction for Image Relighting and 3D Shape Recovery,"* Digital Heritage Granada Conference 2015.

16. X. Huang, O. Cossairt, *"Dictionary Learning based Color Demosaicing for Plenoptic Cameras,"* IEEE International Workshop on Computational Cameras and Displays (CCD), Jun 2014.

17. **Honorable Mention**: O. Cossairt, N. Matsuda, M. Gupta, "*Digital Refocusing with Incoherent Holography*", International Conference on Computational Photography (ICCP), May 2014.

18. K. Mitra, O. Cossairt, A. Veeraraghavan, "*Can we beat Hadamard? Data-driven design and Analysis of Computational Imaging*," International Conference on Computational Photography (ICCP), May 2014.
19. Daniel Miau, Oliver Cossairt and Shree K. Nayar, "*Focal Sweep Videography with Deformable Lenses"*, IEEE International Conference on Computational Photography (ICCP), April 2013.
20. Oliver Cossairt, Daniel Miau, and Shree K. Nayar, "*Gigapixel Computational Imaging"*, IEEE International Conference on Computational Photography (ICCP), Mar 2011.
21. Changyin Zhou, Oliver Cossairt, and Shree K. Nayar, "*Depth from Diffusion"*, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Jun 2010.
22. **Best Paper Award**: Oliver Cossairt and Shree Nayar, "*Spectral Focal Sweep: Extended Depth of Field from Chromatic Aberrations*", IEEE International Conference on Computational Photography (ICCP), Mar 2010.

Other Conferences

1. Z. Wang, Q. Dai, D. Ryu, K. He, R. Horstmeyer, A. Katsaggelos, O. S Cossairt, "*Dictionary-based phase retrieval for space-time super resolution using lens-free on-chip holographic video,"* OSA Imaging and Applied Congress, Computational Optical Sensing and Imaging (COSI), June 2017.
2. Z. Wang, D. Ryu, K. He, O. Cossairt, A. K Katsaggelos, "*4D Tracking of Biological Samples using Lens-free On-chip In-line Holography,"* OSA Digital Holography and Three-Dimensional Imaging, May 2017.
3. N. Matsuda, O. Cossairt, M. Gupta, "Robust 3D Acquisition with Motion Contrast 3D Scanning," Imaging and Applied Optics 2015, OSA Technical Digest (online) (Optical Society of America, 2015).
4. K. He and O. Cossairt, *"A Compressed Sensing Approach to Solving the Dynamic Range Problem in Fourier Transform Holography,"* Imaging and Applied Optics 2015, OSA Technical Digest (online) (Optical Society of America, 2015), paper CW2F.3.
5. L. Spinoulas, O. Cossairt, A. K. Katsaggelos, P. Gill and D. G. Stork, *"Performance Comparison of Ultra-Miniature Diffraction Gratings with Lenses and Zone Plates,"* Imaging and Applied Optics 2015, OSA Technical Digest (online) (Optical Society of America, 2015), paper CM3E.1.
6. K. Mitra, O. Cossairt, A. Veeraraghavan, "*To Denoise or Deblur: Parameter Optimization for Imaging Systems*," SPIE Electronic Imaging Conference, Jan. 2014.
7. O. Cossairt, M. Gupta, K. Mitra, A. Veeraraghavan, "*Performance Bounds for Computational Imaging*," Imaging and Applied Optics Technical Papers, OSA, 2013.
8. O. Cossairt, K. Mitra, A. Veeraraghavan, "*Performance Limits for Computational Photography*," International Workshop on Advanced Optical Imaging and Metrology, Springer, 2013.
9. Oliver Cossairt, Christian Moller, Adrian R. L. Travis, and Stephen A. Benton, "*Novel View-Sequential Display based on DMD Technology"*, SPIE Proc. on Stereoscopic Displays and Virtual Reality, Jan 2004.
10. Christian Moller and Oliver Cossairt, "*Investigation into Screenless 3D TV*", SPIE Proc. on Stereoscopic Displays and Virtual Reality, Jan 2003.

Patents

1. Oliver Cossairt and Nathan Matsuda, "*Motion Contrast Depth Scanning,*" Patent application 15/314,871.
2. Oliver Cossairt, Changyin Zhou, and Shree Nayar, "*Systems, methods, and media for recording an image using an optical diffuser,*" US Patent 9407833, granted 8/16.
3. Oliver Cossairt, Daniel Miau, and Shree Nayar, "*Camera systems and methods for gigapixel computational imaging,"* US Patent 9473700, granted 10/16.

4. Won Chun and Oliver Cossairt. "*Data processing for three-dimensional displays*", US Patent 7,525,541, granted Dec 2009.
5. Gregg Favalora, and Oliver Cossairt, "*Theta-parallax-only (TPO) Displays*", US Patent 7,364,300, granted Apr 2008.
6. Oliver Cossairt, Gregg Favalora, Michael Thomas, and Rick Dorval, "*Optical systems for generating three-dimensional images*", US Patent 7,283,308, granted Oct 2007.
7. Oliver Cossairt and Joshua Napoli. "*Radial multiview three-dimensional displays*". US Patent 7,277,226, granted Oct 2007.
8. Shree K. Nayar , Oliver Cossairt, and Changyin Zhou, "*Systems, Methods, and Media for Recording and Image using an Optical Diffuser*", US Patent App. 2011091358, filed Jan 2011.
9. Oliver Cossairt, "*Image Enhancement for Three-dimensional Displays*", US Patent app. 20070201133, filed Aug 2007.
10. Gregg Favalora, Won Chun, Oliver Cossairt, Rick Dorval, Michael Halle, Joshua Napoli, and Michael Thomas, "*Scanning Optical Devices and Systems*", US Patent app. 20050285027, filed Dec 2005.
11. Oliver Cossairt and Gregg Favalora, "*Minimized-thickness Angular Scanner of Electromagnetic Radiation*". US Patent app. 20060244918, filed Nov 2005.

Synergistic Activities

1. Organizer, IEEE International Conference on Computational Photography (ICCP), 2016.
2. Associate Editor, IEEE Transactions on Computational Imaging, 2014-present.
3. Area Chair, International Conference on Image Processing (ICIP), 2016.
4. Program Committee, SIGGRAPH Conference, 2013-2016.
5. Program Committee, OSA Computational Optics and Sensing (COSI), 2016.
6. Poster and Demos Chair, IEEE International Conference on Computational Photography (ICCP) 2015.
7. Organizer, Workshop on Computational Photography and Intelligent Cameras, 2015.
8. Organizer, ACCV Workshop on Image Restoration and Enhancement, 2014.
9. Organizer, CVPR Workshop on Computational Cameras and Displays, 2014-2015.
10. Program Committee, International Conference on Image Processing (ICIP), 2015-present.
11. Program Committee, IEEE International Conference on Computational Photography (ICCP), 2013-2015.
12. Program Committee, International Conference on Computer Vision and Pattern Recognition (CVPR), 2013-2016.
13. Program Committee, Asian Conference on Computer Vision (ACCV), 2014.
14. Program Committee, ECCV Light Field for Computer Vision (LC4CV) Workshop, 2014.
15. NSF SBIR/STTR Panel Reviewer: Photonic/Optical Systems, 2013-2015.
16. Program Committee, International Conference on Computer Vision and Pattern Recognition (CVPR) Workshop on Computational Cameras and Displays, 2012-2016.
17. Program Committee, GCPR Conference on New Imaging Modalities (INM), 2013.
18. Program Committee, Asian Conference on Computer Vision (ACCV) Workshop on Computational Photography and Low-Level Vision, 2012.
19. Reviewer for several high-quality conference proceedings and journal publications including, ACM SIGGRAPH, ACM Transactions on Graphics, Eurographics Symposium on Rendering (EGSR), IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), International Journal of Computer Vision (IJCV), Applied Optics, and Optics Express.

Invited Talks

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.