

S. Derin Babacan

Google, Inc.
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- EDUCATION
- Northwestern University, Evanston, IL USA** December 2009
Ph.D., Electrical Engineering and Computer Science
Thesis: *Bayesian Techniques for Image Recovery*
Advisor: Prof. Aggelos K. Katsaggelos
- Northwestern University, Evanston, IL USA** June 2006
M.S., Electrical Engineering and Computer Science
Thesis: *Spatiotemporal Algorithms for Joint Background Subtraction and Video Segmentation*
Advisor: Prof. Thrasos N. Pappas
- Bogazici University, Istanbul, Turkey** June 2004
B.S., Electrical and Electronics Engineering
Thesis: *Multispectral and Hyperspectral Image Compression*
Advisor: Prof. Emin Anarim
- INTERESTS
- Bayesian methods
 - Image recovery (restoration, blind deconvolution, super resolution)
 - Computational Photography
 - Compressive sensing
 - Machine learning
 - Biomedical Image Processing
- WORK EXPERIENCE
- Google, Inc.**
Software Engineer Oct. '12 to Present
- Tech lead of Auto Enhance in Google Photos. Auto enhance is launched in Google I/O 2013 keynote, and it is designed to improve the appearance of all photos uploaded to Google+ using image processing, computer vision and machine learning methods.
- Beckman Institute for Advanced Science and Technology, University of Illinois at Urbana-Champaign**
Beckman Institute Postdoctoral Fellow Aug. '09 to Oct. '12
- Modeling and inference in various inverse problems in biological, biomedical imaging and computer vision. Collaborations with Profs. Minh Do, Zhi-pei Liang and Gabriel Popescu.
- Image and Video Processing Lab, Northwestern University**
Research Assistant Sept. '04 to Aug. '09
- *Bayesian Methods for Compressive Sensing*. Advisor: Prof. A. K. Katsaggelos
Novel fully automated Bayesian methods to model and exploit the sparsity to accurately and efficiently reconstruct signals and optimize the sampling methods. Applications in medical- and neuro-imaging.

- **Bayesian Techniques for Image Recovery.** Advisor: Prof. A. K. Katsaggelos. Novel fully-Bayesian methods for image recovery, parameter estimation and system identification in image restoration, blind deconvolution, and super resolution problems. Specifically, fully-automated methods that model and preserve the nature of images that deliver state-of-the-art performance. Various applications in medical imaging, photography, and computational photography.
- **Spatiotemporal Video Segmentation and Moving Object Detection.** Advisor: Prof. T. N. Pappas. Novel spatiotemporal algorithms to identify objects in video sequences and detect semantically interesting regions. It combines traditional probabilistic temporal modeling with spatio-temporal Markov Random Field constraints for advanced yet very efficient (real-time) modeling and segmentation of videos.
- **Scalable Video Coding.** Advisor: Prof. A. K. Katsaggelos. In collaboration with Motorola. New bitstream extraction and motion vector prediction techniques for the Scalable Video Coding Extension of the H.264/AVC Standard.

Photoshop Group, Adobe Systems Inc.
Imaging Scientist Intern

Full-time: July '06 to Oct. '06, June '07 to Sept. '07
Part-time: Oct. '06 to June '08

- **Light Field Photography.** Supervisor: Dr. Todor Georgiev. Acquisition, compression, presentation and other applications in computational photography and image-based rendering, specifically with light-field images. Some main topics are designing new cameras to acquire light-field images and new algorithms for post-processing.

Communications Lab, University of Nebraska - Lincoln
Research Scholar

June '02 to Aug. '02

- **Predictive Image Compression Using Conditional Averages.** Advisor: Prof. Khalid Sayood. Developed a novel lossless image compression scheme using statistical estimation with conditional context classification. One of the state-of-the-art methods in the lossless compression literature of traditional and hyperspectral images.

**TEACHING
EXPERIENCE**

Lecturer, University of Illinois at Urbana-Champaign

- ECE 418 Introduction to Digital Image and Video Processing Spring '11

Guest Lecturer, Northwestern University

- EECS 420 Digital Image Processing, Prof. A. K. Katsaggelos Winter '10
- EECS 222 Signals and Systems, Prof. A. K. Katsaggelos Winter '09
- EECS 421 Multimedia Signal Processing, Prof. A. K. Katsaggelos Spring '06
- EECS 359 Digital Signal Processing, Prof. T. N. Pappas Fall '05

Teaching Assistant, Northwestern University

- EECS 222 Signals and Systems, Prof. A. K. Katsaggelos Winter '08
- EECS 421 Multimedia Signal Processing, Prof. A. K. Katsaggelos Spring '06
- EECS 359 Digital Signal Processing, Prof. T. N. Pappas Fall '05
- EECS 222 Signals and Systems, Prof. A. K. Katsaggelos Winter '05

Teaching Assistant, Bogazici University

- EE 373 Signals and Systems, Prof. Y. Istefanopulos Spring '04

**HONORS AND
AWARDS**

- Hot Topics Talk Prize Presentation, in ECI Conference on Advances in Optics for Biotechnology, Medicine and Surgery XII, 2011.
- Beckman Institute Postdoctoral Fellowship, University of Illinois at Urbana-Champaign, 2010.
- IEEE International Conf. on Image Processing 2010 (ICIP'10) IEEE SPS Travel Grant, 2010.

- IEEE International Conf. on Image Processing 2009 (ICIP'09) Student Author Participation Award, 2009.
- Smith Terminal Year Fellowship by the McCormick School of Engineering, Northwestern University, 2008 - 2009.
- Best Project Award in Adobe Systems Tech Summit 2008 - Winning Team Member, Feb. 2008.
- IBM Best Student Paper Award for IEEE International Conf. on Image Processing 2007, Sept. 2007.
- Walter P. Murphy Fellowship, ECE Department, Northwestern University, Sept. 2004 to June 2005.
- High Honor Student Award, Bogazici University, Istanbul Turkey, July 2004.
- Prime Ministry Award of Turkey, for the rank 16th out of 1.500.000 students in National University Acceptance Exams, Turkey, Aug. 2000.

PROFESSIONAL ACTIVITIES

- Associate Editor, Digital Signal Processing, Elsevier.
- Session chair in the Engineering in Medicine and Biology Conference, 2011.
- Reviewer for Refereed Conferences and Journals
 - Digital Signal Processing, Elsevier
 - IEEE Transactions on Image Processing
 - IEEE Transactions on Signal Processing
 - IEEE Journal on Selected Topics in Signal Processing
 - Magnetic Resonance in Medicine
 - The Computer Journal
 - IEEE Data Compression Conference
 - IEEE International Conf. of Image Processing (ICIP)
 - IEEE International Conf. of Computer Vision (ICCV)
 - IEEE International Conf. on Acoustics, Speech, and Signal Processing (ICASSP)
- Vice President of IEEE Student Branch, Bogazici University, 2003 - 2004

PUBLICATIONS

JOURNAL PAPERS

1. T. Kim, R. Zhou, M. Mir, **S. D. Babacan**, P. S. Carney, L. Goddard, and G. Popescu, "White light diffraction tomography of unlabeled live cells," to appear in Nature Photonics, 2014.
2. **S. D. Babacan**, S. Nakajima, and M. N. Do, "Bayesian Group-Sparse Modeling and Variational Inference," to appear in IEEE Transactions on Signal Processing, 2014.
3. M. S. Grigola, C. L. Dyck, **S. Derin Babacan**, D. N. Joaquin, K. J. Hsia, "Myoblast alignment on 2D wavy patterns: Dependence on feature characteristics and cell-cell interaction," to appear in Biotechnology and Bioengineering, 2014.
4. Z. Chen, **S. D. Babacan**, R. Molina, and A. K. Katsaggelos, "Variational Bayesian Methods For Multimedia Problems," to appear in IEEE Transaction on Multimedia, 2014.
5. M. Tallon, J. Mateos, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Space-variant blur deconvolution and denoising in the dual exposure problem," Information Fusion, vol. 14, no. 4, 396-409, October 2013.
6. F. Lam, **S. D. Babacan**, J. P. Haldar, M. W. Weiner, N. Schuff, and Z.-P. Liang, "Denoising diffusion-weighted magnitude MR images using rank and edge constraints," Magnetic Resonance in Medicine, Apr. 2013.

7. S. Villena, M. Vega, **S. D. Babacan**, R. Molina, and A. Katsaggelos, "Bayesian Combination of Sparse and non Sparse Priors in Image Super Resolution," *Digital Signal Processing*, vol. 23, no. 2, 530-541, 2013.
8. S. Nakajima, M. Sugiyama, **S. D. Babacan**, "Variational Bayesian Sparse Additive Matrix Factorization," *Machine Learning*, vol. 92, pp. 319-347, (Special Issue of Selected Papers of ACML 2012), 2013.
9. S. Nakajima, M. Sugiyama, **S. D. Babacan**, R. Tomioka, "Global Analytic Solution of Fully-observed Variational Bayesian Matrix Factorization," *Journal of Machine Learning Research*, vol. 14, pp. 1-37, 2013.
10. M. Luessi, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Bayesian Simultaneous Sparse Approximation with Smooth Signals," *IEEE Transactions on Signal Processing*, vol. 61, no. 22, pp. 5617-5729, Nov. 2013.
11. M. Mir*, **S. D. Babacan***, M. Bednarz, M. N. Do, I. Golding, and G. Popescu, "Visualizing *Escherichia coli* Sub-Cellular Structure Using Three-dimensional Sparse Deconvolution Spatial Light Interference Tomography," in *PloS ONE*, June 2012. *Equal Contribution
12. **S. D. Babacan**, R. Ansorge, M. Luessi, P. Ruiz, R. Molina, and A.K. Katsaggelos, "Compressive Light Field Sensing," in *IEEE Transactions on Image Processing*, vol. 21, no. 12, pp. 4746-4757, Dec. 2012.
13. **S. D. Babacan**, M. Luessi, R. Molina, and A.K. Katsaggelos, "Sparse Bayesian Methods for Low-Rank Matrix Estimation," *IEEE Transactions on Signal Processing*, vol. 60, no. 8, pp. 3964-3977, Aug. 2012.
14. **S. D. Babacan**, Z. Wang, M. Do, and G. Popescu, "Cell Imaging Beyond the Diffraction Limit Using Sparse Deconvolution Spatial Light Interference Microscopy," *Biomed. Opt. Express* 2, 1815-1827 (2011).
15. **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Variational Bayesian Super Resolution," *IEEE Transactions on Image Processing*, vol. 20, no. 4, April 2011.
16. M. Luessi, **S. D. Babacan**, J. Booth, R. Molina, and A.K. Katsaggelos, "Bayesian symmetrical EEG/fMRI Fusion with Spatially Adaptive Priors," *Neuroimage*, vol. 55, issue 1, pp. 113-132, March 2011.
17. **S. D. Babacan**, J. Wang, R. Molina, and A.K. Katsaggelos, "Bayesian Blind Deconvolution from Differently Exposed Image Pairs," *IEEE Transactions on Image Processing*, vol. 10, no. 11, November 2010.
18. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. "Bayesian Compressive Sensing using Laplace Priors," *IEEE Transactions on Image Processing*, vol. 19, issue 1, 53-64, Jan. 2010.
19. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. "Variational Bayesian Blind Deconvolution Using A Total Variation Prior," *IEEE Transactions on Image Processing*, vol. 18, no 1, pp. 12-26, Jan. 2009.
20. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. "Parameter Estimation in TV Image Restoration Using Variational Distribution Approximation," *IEEE Transactions on Image Processing*, vol. 17, no 23, pp. 326-339, Mar. 2008.
21. H. Wang, **S. D. Babacan**, K. Sayood. "Lossless Hyperspectral Image Compression Using Context-Based Conditional Average," *IEEE Transactions on Geoscience and Remote Sensing*, vol. 45, no 12, pp. 4187-4193, Dec. 2007.

REFEREED
CONFERENCE
PROCEEDINGS

1. S. Nakajima, A. Takeda, **S. D. Babacan**, M. Sugiyama, and I. Takeuchi, "Global Solver and Its Efficient Approximation for Variational Bayesian Low-Rank Subspace Clustering," in *Neural Information Processing Systems (NIPS 2013)*, Lake Tahoe, USA, December 5-10, 2013.

2. **S. D. Babacan**, S. Nakajima, M. N. Do, “Probabilistic Low-Rank Subspace Clustering,” in Neural Information Processing Systems (NIPS 2012), Lake Tahoe, USA, December 2012.
3. S. Nakajima, R. Tomioka, M. Sugiyama, **S. D. Babacan**, “Perfect Dimensionality Recovery by Variational Bayesian PCA,” in Neural Information Processing Systems (NIPS 2012), Lake Tahoe, USA, December 2012.
4. S. Nakajima, M. Sugiyama, **S. D. Babacan**, “Sparse Additive Matrix Factorization for Robust PCA,” Asian Conference on Machine Learning (ACML 2012), Singapore, November 2012.
5. **S. D. Babacan**, R. Molina, M. N. Do, A.K. Katsaggelos, “Bayesian Blind Deconvolution with General Sparse Image Priors,” in European Conference on Computer Vision (ECCV), Firenze, Italy, October 2012.
6. **S. D. Babacan**, F. Lam, X. Peng, M. N. Do, Z.-P. Liang, “Interventional MRI with Sparse Sampling Using Union-of-Subspaces,” in IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Barcelona, Spain, May 2012.
7. A. G. Christodoulou, **S. D. Babacan**, Z.-P. Liang, “Accelerating Cardiovascular Imaging By Exploiting Regional Low-Rank Structure Via Group Sparsity,” in IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Barcelona, Spain, May 2012.
8. F. Lam, **S. D. Babacan**, J. P. Haldar, N. Schuff, Z.-P. Liang, “Denoising Diffusion-Weighted MR Image Sequences using Low Rank and Edge Constraints,” in IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Barcelona, Spain, May 2012.
9. A. G. Christodoulou, **S. D. Babacan**, Z.-P. Liang, “Dynamic Imaging Using Sparse Sampling with Rank and Group Sparsity Constraints,” in International Society for Magnetic Resonance in Medicine 19th Scientific Meeting (ISMRM), Melbourne, Australia, May 2012.
10. F. Lam, **S. D. Babacan**, J. P. Haldar, N. Schuff, Z.-P. Liang, “Denoising Diffusion-Weighted MR Images Using Low Rank Structure and Edge Constraints,” in International Society for Magnetic Resonance in Medicine 19th Scientific Meeting (ISMRM), Melbourne, Australia, May 2012.
11. D. B. Kubacki, H. Q. Buia, **S. D. Babacan**, M. N. Do, “Registration and integration of multiple depth images using signed distance function,” in SPIE Computational Imaging X, San Francisco, USA, January 2012.
12. S. Nakajima, M. Sugiyama, **S. D. Babacan**, “Global Solution of Fully-Observed Variational Bayesian Matrix Factorization is Column-Wise Independent,” Neural Information Processing Systems (NIPS 2011), Granada, Spain, December 2011.
13. **S. D. Babacan**, M. Luessi, L. Spinoulas, A. K. Katsaggelos, N. Gopalsami, T. W. Elmer, R. Ahern, S. Liao, A. Raptis, “Compressive Passive Millimeter-Wave Imaging,” IEEE International Conference on Image Processing (ICIP), Brussels, Belgium, September 2011.
14. **S. D. Babacan**, X. Peng, X.-P. Wang, M. N. Do, Z.-P. Liang, “Reference-Guided Sparsifying Transform Design for Compressive Sensing MRI,” in Engineering in Medicine and Biology Conference (EMBC), Boston, July, 2011.
15. P. Ruiz, **S. D. Babacan**, L. Gao, Z. Li, R. Molina, A. K. Katsaggelos, “Video Retrieval Using Sparse Bayesian Reconstruction,” IEEE International Conference on Multimedia & Expo (ICME 2011), Barcelona, Spain, July 2011.
16. S. Nakajima, M. Sugiyama, **S. D. Babacan**, “On Bayesian PCA: Automatic Dimensionality Selection and Analytic Solution,” International Conference on Machine Learning (ICML 2011), Bellevue, Washington, June 2011.
17. **S. D. Babacan**, M. Luessi, R. Molina, and A.K. Katsaggelos, “Low-Rank Matrix Completion by Variational Sparse Bayesian Learning,” in International Conference on Acoustics, Speech, and Signal Processing (ICASSP’11), Prague, Czech Republic, May 2011.

18. X. Peng, H. Du, F. Liam, **S. D. Babacan**, Z-P Liang, "Reference-Driven MR Image Reconstruction with Sparsity and Support Constraints," in IEEE International Symposium on Biomedical Imaging (ISBI 2011), Chicago, March 2011.
19. B. Amizic, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Sparse Bayesian Blind Image Deconvolution with Parameter Estimation," European Signal Processing Conference (EUSIPCO), Denmark, August 2010.
20. M. Tallon, J. Mateos, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Combining observation models in dual exposure problems using the Kullback-Leibler Divergence," European Signal Processing Conference (EUSIPCO), Denmark, August 2010.
21. **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Sparse Bayesian Image Restoration," IEEE International Conference on Image Processing (ICIP), Hong Kong, September 2010.
22. S. Villen, M. Vega, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Using the Kullback-Leibler Divergence to Combine Image Priors in Super-Resolution Image Reconstruction," IEEE International Conference on Image Processing (ICIP), Hong Kong, September 2010.
23. M. Luessi, **S. D. Babacan**, J. Booth, R. Molina, and A.K. Katsaggelos, "Symmetrical EEG/fMRI Fusion with Spatially Adaptive Priors Using Variational Distribution Approximation," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP'10), Dallas, TX, 2010.
24. B. Amizic, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Fast Total Variation Image Restoration with Parameter Estimation Using Bayesian Inference," in International Conference on Acoustics, Speech, and Signal Processing (ICASSP'10), Dallas, TX, 2010.
25. **S. D. Babacan**, R. Ansorge, M. Luessi, R. Molina, and A.K. Katsaggelos, "Compressive Sensing of Light Fields," in IEEE International Conference on Image Processing (ICIP'09), Cairo, Egypt, Nov 2009.
26. **S. D. Babacan**, J. Wang, R. Molina, and A.K. Katsaggelos, "Bayesian Blind Deconvolution from Differently Exposed Image Pairs," in IEEE International Conference on Image Processing (ICIP'09), Cairo, Egypt, Nov 2009.
27. L. Mancera, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Image restoration by mixture modelling of an overcomplete linear representation," in IEEE International Conference on Image Processing (ICIP'09), Cairo, Egypt, Nov 2009.
28. S. Belekos, N. Galatsanos, **S. D. Babacan**, and A.K. Katsaggelos, "Maximum a posteriori Super-Resolution of compressed video using a new multichannel image prior," in IEEE International Conference on Image Processing (ICIP'09), Cairo, Egypt, Nov 2009.
29. E. Vera, L. Mancera, **S. D. Babacan**, R. Molina, and A.K. Katsaggelos, "Bayesian Compressive Sensing Of Wavelet Coefficients Using Multiscale Laplacian Priors," in IEEE Workshop on Statistical Signal Processing (SSP09), Cardiff, Wales, UK, August 2009.
30. **S. D. Babacan**, L. Mancera, R. Molina, A. K. Katsaggelos. "Bayesian Compressive Sensing Using Non-Convex Priors," in European Signal Processing Conference (EUSIPCO'09), Glasgow, Scotland, August 2009.
31. **S. D. Babacan**, R. Molina, and A. K. Katsaggelos, "Fast Bayesian Compressive Sensing using Laplace Priors," in IEEE International Conf. on Acoustics, Speech, and Signal Processing (ICASSP'09), Taipei, Taiwan, April 2009.
32. **S. D. Babacan**, R. Molina, and A. K. Katsaggelos, "Total Variation Super Resolution Using A Variational Approach," in IEEE International Conference on Image Processing (ICIP'08), San Diego, USA, Oct. 2008.
33. **S. D. Babacan**, X. Yin, A. C. Larson, and A. K. Katsaggelos, "Combination of MR Surface Coil Images Using Weighted Constrained Least Squares," in IEEE International Conference on Image Processing (ICIP'08), San Diego, USA, Oct. 2008.

34. T. Georgiev, C. Intwala, **S. D. Babacan**, A. Lumsdaine, “Unified Frequency Domain Analysis of Lightfield Cameras,” in Proceedings of European Conference on Computer Vision (ECCV), Marseille, France, Oct. 2008.
35. **S. D. Babacan**, R. Molina, and A. K. Katsaggelos, “Parameter Estimation in Total Variation Blind Deconvolution,” in European Signal Processing Conference (EUSIPCO’08), Lausanne, Switzerland, Aug. 2008.
36. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. “Generalized Gaussian Markov Random Field Image Restoration Using Variational Distribution Approximation,” in IEEE International Conf. on Acoustics, Speech, and Signal Processing (ICASSP’08), Las Vegas, USA, March 2008.
37. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. “Total Variation Blind Deconvolution Using A Variational Approach To Parameter, Image, and Blur Estimation,” in European Signal Processing Conference (EUSIPCO’07), Poznan, Poland, Sept. 2007
38. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. “Total Variation Image Restoration and Parameter Estimation Using Variational Distribution Approximation,” in International Conference on Image Processing (ICIP’07), *-IBM Best Student Paper Award-*, San Antonio, USA, Sept. 2007
39. **S. D. Babacan**, T. N. Pappas. “Spatiotemporal Algorithm for Background Subtraction,” in International Conference on Acoustics, Speech, and Signal Processing (ICASSP’07), Hawaii, USA, April 2007.
40. **S. D. Babacan**, T. N. Pappas. “Spatiotemporal Algorithm for Joint Video Segmentation and Foreground Detection,” in European Signal Processing Conference (EUSIPCO’06), Florence, Italy, Sept. 2006.
41. H. Wang, **S. D. Babacan**, Khalid Sayood. “Lossless Hyperspectral Image Compression Using Context-Based Conditional Averages,” in Data Compression Conference (DCC’05), pp. 418-426, 2005.
42. **S. D. Babacan**, K. Sayood. “Predictive Image Compression Using Conditional Averages,” in Data Compression Conference (DCC’04), 2004: 524

BOOK
CHAPTERS

1. **S. D. Babacan**, R. Molina, A. K. Katsaggelos. “Variational Bayesian Super Resolution Reconstruction,” in Super-Resolution Imaging, Peyman Milanfar, Ed., Taylor&Francis/CRC Press, 2011.
2. A. K. Katsaggelos, **S. D. Babacan**, C.-J. Tsai. “Iterative Image Restoration,” in The Essential Guide to Image Processing, Alan Bovik, Ed., Elsevier, 2009.
3. T. E. Bishop, **S. D. Babacan**, B. Amizic, A.K. Katsaggelos, T. Chan, R. Molina. “Blind image deconvolution: problem formulation and existing approaches,” in Blind Image Deconvolution: Theory and Applications, P. Campisi and K. Egiazarian, Eds., CRC press, 2007.

PRESENTATIONS

1. “Visual Information Processing Using Depth Sensors,” in Electrical and Electronics Engineering Department, Bogazici University, Turkey, May 2012.
2. “Interventional MRI with Sparse Sampling Using Union-of-Subspaces,” in IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Barcelona, Spain, May 2012.
3. “Accelerating Cardiovascular Imaging By Exploiting Regional Low-Rank Structure Via Group Sparsity,” in IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Barcelona, Spain, May 2012.
4. “Denoising Diffusion-Weighted MR Image Sequences using Low Rank and Edge Constraints,” in IEEE International Symposium on Biomedical Imaging: From Nano to Macro (ISBI), Barcelona, Spain, May 2012.

5. "Global Solution of Fully-Observed Variational Bayesian Matrix Factorization is Column-Wise Independent," Neural Information Processing Systems (NIPS 2011), Granada, Spain, December 2011.
6. "Image and Video Processing with Depth," in Coordinated Science Laboratory 60th Symposium, University of Illinois at Urbana-Champaign, November, 2011.
7. "Reference-Guided Sparsifying Transform Design for Compressive Sensing MRI," in Engineering in Medicine and Biology Conference (EMBC), Boston, July, 2011.
8. "Deconvolution Spatial Light Interference Microscopy for Subdiffraction Imaging of Live Cells," **Hot Topics Talk**, in ECI Conference on Advances in Optics for Biotechnology, Medicine and Surgery XII, Naples, FL, June 2011.
9. "Low-Rank Matrix Completion by Variational Sparse Bayesian Learning," in International Conf. on Acoustics, Speech, and Signal Processing (ICASSP'11), Prague, Czech Republic, May 2011.
10. "Reference-Driven MR Image Reconstruction with Sparsity and Support Constraints," in IEEE International Symposium on Biomedical Imaging (ISBI 2011), Chicago, March 2011.
11. "Using the Kullback-Leibler Divergence to Combine Image Priors in Super-Resolution Image Reconstruction," in IEEE International Conf. on Image Processing, Hong Kong, September 2010.
12. "Bayesian Techniques for Image Recovery," Signal Processing Seminar, Beckman Institute, University of Illinois at Urbana-Champaign, December, 2009.
13. "Compressive Sensing of Light Fields," in IEEE International Conf. on Image Processing (ICIP'09), Cairo, Egypt, November 2009.
14. "Bayesian Blind Deconvolution from Differently Exposed Image Pairs," in IEEE International Conf. on Image Processing (ICIP'09), Cairo, Egypt, November 2009.
15. "Fast Bayesian Compressive Sensing using Laplace Priors," in IEEE International Conf. on Acoustics, Speech, and Signal Processing (ICASSP'09), Taipei, Taiwan, April 2009.
16. "Bayesian Compressive Sensing using Laplace Priors," in the Department of Computer Science and Artificial Intelligence, University of Granada, Granada, Spain, September 2008.
17. "Generalized Gaussian Markov Random Field Image Restoration Using Variational Distribution Approximation," in IEEE International Conf. on Acoustics, Speech, and Signal Processing (ICASSP'08), Las Vegas, USA, March 2008.
18. "Total Variation Image Restoration and Parameter Estimation Using Variational Distribution Approximation," in IEEE International Conference on Image Processing (ICIP'07), San Antonio, USA, September 2007.
19. "Light Field Photography", Photoshop Group, Adobe Systems, October 2006.