REBECCA M. WILLETT

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PROFESSIONAL PREPARATION

Duke University, Durham, NC; B.S.E. Double major in Electrical Engineering and Computer Science; GPA: 3.95/4.00; Ranked 3 in a class of 230; Graduated with Distinction and *Summa cum laude*; May 2000.

Rice University, Houston, TX; M.S./Ph.D. program in the Electrical and Computer Engineering Department; GPA: 4.03/4.00; Advisor Prof. Robert Nowak; M.S. in May 2002, Ph.D. in May 2005.

APPOINTMENTS

University of Chicago, Professor of Statistics and Computer Science, Chicago, IL, 2018 - present

University of Wisconsin-Madison, Associate Professor of Electrical and Computer Engineering, Affiliated Associate Professor of Computer Sciences, Statistics, Mathematics, and Industrial and Systems Engineering, Fellow of the Wisconsin Institutes of Discovery, and Spangler Faculty Scholar, Madison, WI, 2013 - 2018.

Duke University, Associate Professor of Electrical and Computer Engineering, January 2013 - August 2013.

Duke University, Assistant Professor of Electrical and Computer Engineering, August 2005 - December 2012.

PRODUCTS
Relevant Products:

[R1] D. Gilton, G. Ongie, and R. Willett, "Neumann networks for inverse problems in imaging," submitted, arXiv preprint arXiv:1901.03707, 2019.

[R2] X. Jiang and R. Willett, "Online data thinning via multi-subspace tracking," *arXiv preprint arXiv:1609.03544*, 2016.

[R3] W. J. Marais, R. E. Holz, Y. H. Hu, R. E. Kuehn, E. E. Eloranta, and R. M. Willett, "Approach to simultaneously denoise and invert backscatter and extinction from photon-limited atmospheric lidar observations," *Applied Optics*, https://doi-org.ezproxy.library.wisc.edu/10.1364/AO.55.008316, 2016.

[R4] R. Willett W. Marais, "Proximal-gradient methods for poisson image reconstruction with BM3D-based regularization," in *IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, 2017.

[R5] E. Hall and R. Willett, "Online convex optimization in dynamic environments," *IEEE Journal of Selected Topics in Signal Processing – Signal Processing for Big Data*, vol. 9, no. 4, *Winner of IEEE Signal Processing Society Young Author Best Paper Award*, arXiv:1307:5944, 2015.

Significant Products:

[S1] R. M. Willett, M. F. Duarte, M. A. Davenport, and R. G. Baraniuk, "Sparsity and structure in hyperspectral imaging: Sensing, reconstruction, and target detection," *IEEE Signal Processing Magazine*, vol. 31, no. 1, pp. 116–126, 10.1109/MSP.2013.2279507, 2014.

[S2] M. Raginsky, R. Willett, Z. Harmany, and R. Marcia, "Compressed sensing performance bounds under Poisson noise," *IEEE Transactions on Signal Processing*, vol. 58, no. 8, pp. 3990–4002, arXiv:0910.5146, 2010.

[S3] J. Silva and R. Willett, "Hypergraph-based anomaly detection in very large networks," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 31, no. 3, pp. 563–569, doi:10.1109/TPAMI.2008.232, 2009.

[S4] A. Wagadarikar, R. John, R. Willett, and D. Brady, "Single disperser design for coded aperture snapshot spectral imaging," *Applied Optics*, vol. 47, no. 10, pp. B44–B51, 2008.

[S5] R. Willett and R. Nowak, "Platelets: a multiscale approach for recovering edges and surfaces in photon-limited medical imaging," *IEEE Transactions on Medical Imaging*, vol. 22, no. 3, pp. 332–350, doi:10.1109/TMI.2003.809622, 2003.

Synergistic Activities

1. Co-organizer of two IPAM workshops Geometry of Big Data and Deep Geometric Learning of Big Data and Applications, May 2019

2. Technical Co-Chair for 2022 IEEE International Conference on Image Processing in Bordeaux, France

3. Invited lectures to broad (often non-technical) audiences on data science and machine learning, including the upcoming 2017 Wisconsin Science Festival, Ecoinformatics in Agricultural Research, and the SC Governors School for Science and Mathematics, 2017

4. Short course instructor at Institute for Advanced Studies Women in Mathematics Program on Sparsity and Computation

5. Workshop presenter at the Sally Ride Science Festival and Duke FEMMES (Females Excelling More in Math, Engineering and Science) Program, educating girls about careers in science and engineering