

Brian D. Rigling, Wright State University

Ph.D., Electrical Engineering, The Ohio State University	2003
M.S., Electrical Engineering, The Ohio State University	2000
B.S., Physics-Computer Science, University of Dayton	1998

Dr. Rigling's radar signal processing background includes work in both academic and industrial arenas. As an M.S. student in electrical engineering at Ohio State University, he took part in research of physics-based models for canonical scattering centers and application of those models to synthetic aperture radar. Dr. Rigling's Ph.D. dissertation, also completed at Ohio State University, encompassed a number of signal processing algorithms for bistatic and multistatic SAR: image formation processing, stereo height estimation, interferometric height estimation, motion compensation, flight path design for 3-D reconstruction, and 3-D canonical scattering models. Dr. Rigling's M.S. in EE was completed in June 2000 under the advisement of Prof. Lee Potter and Prof. Randy Moses, and his Ph.D. in EE was completed in June 2003 under the advisement of Prof. Randy Moses.

From July 2000 through June 2004, Dr. Rigling worked as a systems engineer for Northrop Grumman Electronic Systems in Baltimore, MD. During his time there, he worked on synthetic aperture projects for sonar, radar, and ladar. Dr. Rigling lead junior engineers in several internal research and development efforts, investigating SAR autofocus, SAR image speckle reduction, multi-look processing, and SAR image formation. He was also the image formation team leader for the DARPA program Synthetic Aperture Ladar for Tactical Imaging (SALTI). The image formation team was responsible for the design and development of signal processing algorithms for system simulation, image formation, autofocus, and image enhancement. He was also heavily involved in the derivation of system requirements and flow-down to subsystem requirements.

Journal publications:

John, R. and Rigling, B., "Effect of Height to Width Ratio on K and CMOD Solutions for a Single Edge Cracked Geometry with Clamped Ends," *Engineering Fracture Mechanics*, vol. 60, 147-156, 1998.

Rigling, B. and Schniter, P., "Subspace Leaky LMS," *IEEE Signal Processing Letters*, 2004, 11(2): 136-139, Feb 2004.

Rigling, B. and Moses, R., "Flight Path Strategies for 3-D Bistatic SAR," *IEE Proceedings – Radar, Sonar, and Navigation*, vol. 151, no. 3, 149-157, June 2004.

Rigling, B. and Moses, R., "Taylor Expansion of the Differential Range for Monostatic SAR," *IEEE Trans. Aerospace and Electronic Systems*, vol. 41, no. 1, 60-64, January 2005.

Rigling, B. and Moses, R., "Polar Format Algorithm for Bistatic SAR," *IEEE Trans. Aerospace and Electronic Systems*, vol. 40, no. 4, 1147-1159, October 2004.

Rigling, B. and Moses, R., "Three-dimensional Surface Reconstruction from Multistatic SAR Images," *Accepted for publication in IEEE Transactions on Image Processing, September 2004.*

Rigling, B. and Moses, R., "Motion Measurement Errors and Autofocus in Bistatic SAR," *Accepted for publication in IEEE Transactions on Image Processing, March 2003.*

Conference publications:

Rigling, B. and Moore, F., "Exploitation of Sub-populations in Evolution Strategies for Improved Numerical Optimization," MAICS-99 Proceedings, 1999, 80-88.

Rigling, B., Potter, L., and Moses, R., "Relative Information in Phase of Radar Range Profiles," In Algorithms for Synthetic Aperture Radar Imagery VII, Edmund G. Zelnio, editor, Proceedings of SPIE Vol. 4053, 2000.

Moses, R., Potter, L., Rigling, B., and Akyildiz, Y., "Scattering Center Models for Feature Extraction in SAR Imagery," PIERS 2000, July 2000.

Rigling, B., et. al., "Improved SAR Image Auto-focus Through Algorithm Hybridization," EUSAR 2002, 549-552, 2002.

Rigling, B. and Moses, R., "Three-dimensional Surface Reconstruction from Multistatic SAR Images," In Algorithms for Synthetic Aperture Radar Imagery X, Edmund G. Zelnio, editor, Proceedings of SPIE Vol. 5095, 2003.

Rigling, B. and Moses, R., "GTD-based Scattering Models for Bistatic SAR," In Algorithms for Synthetic Aperture Radar Imagery XI, Edmund G. Zelnio, editor, Proceedings of SPIE, 2004.

Rigling, B., "Adaptive Filtering for Air-To-Ground Surveillance," In Algorithms for Synthetic Aperture Radar Imagery XI, Edmund G. Zelnio, editor, Proceedings of SPIE, 2004.

Rigling, B., "Adaptive Noise Radar for Simultaneous Bistatic SAR and GMTI," In Algorithms for Synthetic Aperture Radar Imagery XII, Edmund G. Zelnio, editor, Proceedings of SPIE, 2005.

Rigling, B., "Performance Prediction in Adaptive Noise Radar," (invited paper) Asilomar Conference on Signals, Systems, and Computers, November 2004.