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EDUCATION:

Ph.D. – William & Mary, 1991
M.S. – William & Mary, 1988
B.S. – Roanoke College, 1986; Salutatorian

NPS EXPERIENCE:

- July 2020 – Present: Professor, ECE Dept.; Naval Postgraduate School; Monterey, CA
- Apr. 2012 – June 2020: Associate Professor, ECE Dept.; Naval Postgraduate School; Monterey, CA

OTHER EXPERIENCE:

- Aug 1997 – Apr 2012: AVP and Technical Fellow; SAIC; Chantilly, VA
- July 1995 – July 1997: Systems Engineering Specialist; Raytheon E-Systems; Garland, TX
- Jan 1994 – June 1995: Research Scientist; SAIC; McLean, VA
- Oct 1991 – Dec 1993: ONR Postdoctoral Fellow; Naval Research Laboratory; Washington, DC

TEACHING INTERESTS:

- Radar systems
- Electronic warfare
- Signals Intelligence
- Cyber networks

RESEARCH INTERESTS:

- Synthetic aperture radar
- Moving target radar phenomenology
- Radar image formation and focusing

AWARDS:

- Promoted to rank of Professor at Naval Postgraduate School, 01 July 2020
- Appointed as an Associate Editor in the Electronic Warfare area for the IEEE Transactions on Aerospace and Electronic Systems, 03 May 2019
- Granted Academic Tenure at Naval Postgraduate School, 01 July 2018
- Selected to be a SAIC Technical Fellow and a member of the Science and Technology Fellow Council (STFC) in 2006, an honor bestowed upon less than 0.2% of all company employees
- Elevated to Assistant Vice President of Technology position in SAIC, 2006
- Elevated to Senior Member of Institute of Electrical and Electronics Engineers (IEEE), 2001
- Served on the Technology Development Team for the National Security Space Architecture Space-Based Radar Congressionally Directed Action Team, 2001
- Salutatorian of 1986 graduating class at Roanoke College
- Recipient of a Reserve Officers Association Scholarship for all years at Roanoke College
- Recipient of a David Bittle Scholarship for all years at Roanoke College
- **Patents:**
 - Garren, D. A., and Greene, R. R., “Method for developing and using an image reconstruction algorithm for multipath scattering” U.S. Patent 7,515,098, filed: Apr 26, 2007, granted: Apr 7, 2009
 - Garren, D. A., “Method and System for Developing and Using an Image Reconstruction Algorithm for Detecting and Imaging Moving Targets,” U.S. Patent 7,456,780, filed: July 26, 2006, granted: Nov 25, 2008
 - Garren, D. A., “Process for mapping multiple-bounce ghosting artifacts from radar imaging data,” U.S. Patent 7,385,553, filed: Dec 20, 2006, granted: June 10, 2008
 - Garren, D. A., and Greene, R. R., “Method for developing and using an image reconstruction algorithm for multipath scattering” U.S. Patent 7,259,715, filed: Oct 19, 2004, granted: Aug 21, 2007
 - Garren, D. A., “Process for mapping multiple-bounce ghosting artifacts from radar imaging data,” U.S. Patent 7,173,562, filed: Oct 1, 2004, granted: Feb 6, 2007
 - Garren, D. A., “Process for mapping multiple-bounce ghosting artifacts from radar imaging data,” U.S. Patent 6,812,886, filed: Aug 1, 2003, granted: Nov 2, 2004
 - Garren, D. A., “Process for mapping multiple-bounce ghosting artifacts from radar imaging data,” U.S. Patent 6,646,593, filed: Jan 31, 2002, granted: Nov 11, 2003

SELECTED PUBLICATIONS:

- **Book:**
 - Majumder, Uttam K., Blasch, Erik P., and Garren, David A., *Deep Learning for Radar and Communications Automatic Target Recognition*, ISBN: 9781630816377, Artech House, Boston, Available: 31 July 2020
- **Book Chapter:**
 - Garren, D. A., Sacchini, J. J., and Goldstein, J. S., “Investigation of Non-Traditional Transmit Waveforms for SAR Based Target Detection,” in *Principles of Waveform Diversity and Design*, edited by Wicks, M. C., Mokole, E. L., Blunt, S. D., Schneible, R. S., and Amuso, V. J., ISBN: 978-1-891121-95-1, SciTech, Raleigh, NC, 2010
- **Refereed Journal Publications:**
 - Garren, D. A., “Theory of SAR Signature Defocus Morphology for Arbitrary 3D Target Motion over Terrain Relief,” *IEEE Transactions on Geoscience and Remote Sensing*; DOI: 10.1109/TGRS.2019.2891985; Print ISSN 0196-2892, Electronic ISSN 1558-0644; Date of Publication to IEEE Xplore as an Early Access Article: 01 February 2019
 - Garren, D. A., “Theory of Data-Driven SAR Autofocus to Compensate for Refraction Effects,” *IET Radar, Sonar & Navigation*; Vol. 13, Issue: 2, February 2019, pp. 254-262; DOI: 10.1049/iet-rsn.2018.5143; Print ISSN 1751-8784, Online ISSN 1751-8792; Available online as an IET E-First article: 17 September 2018

- Garren, D. A., "Target Motion Estimation Ambiguities for Monostatic Synthetic Aperture Radar," *IEEE Transactions on Aerospace and Electronic Systems*; Vol. 54, Issue: 4, August 2018, pp. 2035-2042; DOI: 10.1109/TAES.2018.2801618; Print ISSN 0018-9251; Online ISSN 1557-9603; Date of Publication to IEEE Xplore as an Early Access Article: 02 February 2018
- Garren, D. A., "SAR Focus Theory of Complicated Range Migration Signatures due to Moving Targets," *IEEE Geoscience and Remote Sensing Letters*; Vol. 15, Issue 4, April 2018, pp. 557-561; DOI: 10.1109/LGRS.2018.2799818; Print ISSN 1545-598X, Electronic ISSN 1558-0571; Date of Publication to IEEE Xplore as an Early Access Article: 12 February 2018
- Garren, D. A., "Ambiguities in 3D Target Motion Estimation for General Radar Measurements," *IET Radar, Sonar & Navigation*; Vol. 11, Issue 10, October 2017, pp. 1523-1529; DOI: 10.1049/iet-rsn.2017.0063; Print ISSN 1751-8784, Online ISSN 1751-8792; Available online as an IET E-First article: 23 June 2017
- Garren, D. A., "SAR Ground-Plane Mover Signatures for Non-Zero Radar Ascent," *IEEE Transactions on Aerospace and Electronic Systems*; Vol. 53, Issue 5, October 2017, pp. 2214-2220; DOI: 10.1109/TAES.2017.2688898; Print ISSN 0018-9251, Online ISSN 1557-9603; Date of Publication to IEEE Xplore as an Early Access Article: 29 March 2017
- Garren, D. A., "Ambiguities in Target Motion Estimation for General SAR Measurements," *IET Radar, Sonar & Navigation*; Vol. 10, Issue 9, December 2016, pp. 1720-1728; DOI: 10.1049/iet-rsn.2016.0024; Print ISSN 1751-8784, Online ISSN 1751-8792; Available online as an IET E-First article: 27 April 2016
- Garren, D. A., "Signature Morphology Effects of Squint Angle for Arbitrarily Moving Surface Targets in Spotlight Synthetic Aperture Radar," *IEEE Transactions on Geoscience and Remote Sensing*; Vol. 53, No. 11, Nov. 2015, pp. 6241-6251; DOI: 10.1109/TGRS.2015.2436371; Date of Publication to IEEE Xplore as an Early Access Article: 29 June 2015
- Garren, D. A., "Theory of Two-Dimensional Signature Morphology for Arbitrarily Moving Surface Targets in Squinted Spotlight Synthetic Aperture Radar," *IEEE Transactions on Geoscience and Remote Sensing*; Vol. 53, No. 9, Sept. 2015, pp. 4997-5008; DOI: 10.1109/TGRS.2015.2416066; Date of Publication to IEEE Xplore as an Early Access Article: 17 April 2015
- Garren, D. A., "Smear signature morphology of surface targets with arbitrary motion in spotlight synthetic aperture radar imagery," *IET Radar, Sonar & Navigation*; Vol. 8, Issue 5, June 2014, pp. 435-448; DOI: 10.1049/iet-rsn.2013.0169; Print ISSN 1751-8784, Online ISSN 1751-8792; Available online as an IET E-First article: 06 January 2014
- Garren, D. A., Odom, A. C., Osborn, M. K., Goldstein, J. S., Pillai, S. U., Guerci, J. R., "Full-Polarization Matched-Illumination for Target Detection and Identification," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 38, No. 3, July 2002, pp. 824-837
- Garren, D. A., Osborn, M. K., Odom, A. C., Goldstein, J. S., Pillai, S. U., Guerci, J. R., "Enhanced Target Detection and Identification via Optimized Radar Transmission Pulse Shape," *IEE Proceedings – Radar, Sonar, and Navigation: Special Issue on Modelling and Simulation of Radar Systems*, Vol. 148, No. 3, June 2001, pp. 130-138

- **Conference Proceedings Publications:**

- Garren, D. A., "Robustness of SAR Refraction Autofocus to Power-Law Errors," published in the proceedings of the 2020 IEEE International Radar Conference; originally planned to be held 27 April 2020 – 01 May 2020 in Boston, Massachusetts, USA, but instead held on-line per COVID-19 issues
- Garren, D. A., "Perturbation amplitude effects of power law errors on refraction autofocus," *Proc. SPIE 11393, Algorithms for Synthetic Aperture Radar Imagery XXVII*, 1139304 (24 April 2020); <https://doi.org/10.1117/12.2557530>

- Garren, D. A., "Effects of Polynomial Plus Power-Law Errors on SAR Refraction Autofocus," published in the proceedings of the 2019 Sensor Signal Processing for Defence Conference; held 09-10 May 2019 in Brighton, UK
- Garren, D. A., "Dependence of Phase History Based SAR Moving Target Autofocus on Signal-to-Clutter Ratio," published in the proceedings of the 2019 IEEE International Radar Conference; held 22-26 April 2019 in Boston, Massachusetts, USA
- Garren, D. A., "Effects of Region of Interest Selection on Phase History Based SAR Moving Target Autofocus," in the Proceedings of SPIE, Vol. 10987, "Algorithms for Synthetic Aperture Radar Imagery XXVI," presented on 18 April 2019 at the SPIE Defense and Security Conference, held 14-18 April 2019, in Baltimore, Maryland, USA, pp. 1098703-1 – 1098703-11
- Garren, D. A., "Insights into SAR Signature Smears for Turning Targets," published in the proceedings of the 2018 Military Sensing Symposia Tri-Service Radar Symposium; held 25-29 June 2018 in Monterey, California, USA
- Garren, D. A., "Insights into SAR Signatures for Target Acceleration Maneuvers," published in the proceedings of the 2018 IEEE International Radar Conference; pp. 0310-0315; held 23-27 April 2018 in Oklahoma City, Oklahoma, USA
- Garren, D. A., "Insights into the Complicated SAR Signature Shapes Induced by Braking Targets," in the Proceedings of SPIE, Vol. 10647, 106470L-1–106470L-15, "Algorithms for Synthetic Aperture Radar Imagery XXV," presented on 19 April 2018 at the SPIE Defense and Security Conference, held 15-19 April 2018, in Orlando, Florida, USA
- Garren, D. A., "Effects of Speed Difference on Accelerating Target Imagery Signatures for Broadside SAR," published in the proceedings of the 2017 IEEE International Geoscience and Remote Sensing Symposium; presented on 26 July 2017; held 23-28 July 2017 in Fort Worth, Texas, USA, pp. 2377 – 2380
- Garren, D. A., "Signature Morphology of Accelerating Targets in Squinted SAR Imagery," published in the proceedings of the 2017 IEEE International Radar Conference; pp. 0220-0225; held 8-12 May 2017 in Seattle, Washington, USA
- Wagner, Z. A., Garren, D. A., and Pace, P. E., "SAR Imagery via Frequency Shift Keying Costas Coding," published in the proceedings of the 2017 IEEE International Radar Conference, pp. 1789-1792; presented on 10 May 2017; held 8-12 May 2017 in Seattle, Washington, USA
- Garren, D. A., "Implications of SAR ambiguities in estimating the motion of slow targets," in the proceedings of SPIE, Vol. 10201, 102010E-1, "Algorithms for Synthetic Aperture Radar Imagery XXIV," presented on 13 April 2017 at the SPIE Defense and Security Conference, held 9-13 April 2017, in Anaheim, California, USA
- Garren, D. A., "Signature Predictions of Surface Targets Undergoing Turning Maneuvers in Squinted SAR," in the Proceedings the 13th European Radar Conference 2016 on 4-6 October 2016; 978-2-87487-045-3; pp. 57-60; Presented on 6 October 2016 in London, UK
- Garren, D. A., "Signature predictions of surface targets undergoing braking maneuvers in squinted spotlight synthetic aperture radar imagery," in the proceedings of SPIE, Vol. 9843, 984303-1, "Algorithms for Synthetic Aperture Radar Imagery XXIII, " edited by Edmund Zelnio and Frederick D. Garber; presented on 21 April 2016 at the SPIE Defense and Security Conference, held 17 – 21 April 2016, in Baltimore, Maryland, USA
- Garren, D. A., "Signatures of Surface Targets with Increasing Speed in Spotlight Synthetic Aperture Radar," in the proceedings of the 2015 IEEE International Radar Conference, 11-15 May 2015 in Arlington, Virginia, USA, pp. 1114 – 1118
- Garren, D. A., "Signature predictions of surface targets undergoing turning maneuvers in spotlight synthetic aperture radar imagery," in the proceedings of SPIE, Vol. 9475, 94750A, "Algorithms for Synthetic Aperture Radar Imagery XXII, " edited by Edmund Zelnio and Frederick D. Garber; presented on 23 April 2015 at the SPIE Defense and Security Conference, held 20 - 24 April 2015, in Baltimore, Maryland, USA
- Garren, D. A., "Signatures of Braking Surface Targets in Spotlight Synthetic Aperture Radar, in the proceedings of 2014 Sensor Signal Processing for Defence, held in Edinburgh, UK, on 08-09 September 2014, 978-1-4799-5294-6/14 IEEE, pp. 51-55

- McAbee, A., Scrofani, J., Tummala, M., Garren, D. and McEachen, J., “Traffic Pattern Detection Using the Hough Transformation for Anomaly Detection to Improve Maritime Domain Awareness,” in the proceedings of Fusion 2014, 17th International Conference on Information Fusion, held in Salamanca, Spain on 7-10 July 2014
- Garren, D. A., Pace, P. E., and Romero R. A., “Use of P-3 Coded Transmission Waveforms to Generate Synthetic Aperture Radar Images,” in the proceedings of the 2014 IEEE Radar Conference, held at Cincinnati Marriott River Center, Ohio on 19-23 May 2014, pp. 0765 – 0768
- Garren, D. A., Pace, P. E., and Romero R. A., “Phenomenology of Low Probability of Intercept Synthetic Aperture Radar via Frank Codes,” in the proceedings of SPIE, Vol. 9093, 909302, "Algorithms for Synthetic Aperture Radar Imagery XXI, " edited by Edmund Zelnio and Frederick D. Garber; presented on 7 May 2014 at the SPIE Defense and Security Conference, held 5 - 9 May 2014, in Baltimore, Maryland

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