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EMPLOYMENT

≥ 2018	University of Virginia , Associate Professor <i>Systems and Information Engineering</i> <i>Darden School of Business</i>
2013–2018	University of Alabama , Assistant/Associate Professor <i>Information Systems, Statistics, Management Science</i>
2008–2013	Spadac/GeoEye/DigitalGlobe , Principal Research Scientist
2007–2008	Statistical and Applied Mathematical Sciences Institute , Post-doc
2006–2008	North Carolina State University , VIGRE Postdoc Fellow <i>Department of Statistics</i>
2006–2008	North Carolina State University , VIGRE Postdoc Fellow
1998–2001	Sanford/Newell-Rubbermaid , Project Engineer

EDUCATION

2006	Ph.D. University of Virginia	Systems and Information Engineering
2003	M.S. Vanderbilt University	Systems Engineering/Management of Technology
1998	B.S. Purdue University	Industrial Engineering

PUBLICATIONS

1. G. Mohler and M.D. Porter. “Rotational grid, PAI-maximizing crime forecasts”. In: *Statistical Analysis and Data Mining* (Accepted)
2. K. Wang and M.D. Porter. “Optimal Bayesian Clustering using Non-negative Matrix Factorization”. In: *Computational Statistics and Data Analysis* 128 (2018), pp. 395–411
3. G. Mohler et al. “Learning to rank spatio-temporal event hotspots”. In: *URB-COMP2018*. 2018
4. K. Wang et al. “How the Choice of Safety Performance Function Affects the Identification of Important Crash Prediction Variables”. In: *Accident Analysis & Prevention* 88.1 (2016), pp. 1–8
5. M.D. Porter. “A Statistical Approach to Crime Linkage”. In: *The American Statistician* 70.2 (2016), pp. 152–165
6. Noémie Bouhana, Shane D. Johnson, and Michael D. Porter. “Consistency and specificity in burglars who commit prolific residential burglary: Testing the core assumptions underpinning behavioural crime linkage”. In: *Legal and Criminological Psychology* 21.1 (2016), pp. 77–94
7. B.J. Reich and M.D. Porter. “Partially-supervised spatiotemporal clustering for burglary crime series identification”. In: *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 178.2 (2015), pp. 465–780
8. G. White and M.D. Porter. “GPU accelerated MCMC for modeling terrorist activity”. In: *Computational Statistics & Data Analysis* 71 (2014), pp. 643–651

9. G. White et al. "Modelling the effectiveness of counter-terrorism interventions". In: *Trends & Issues in Crime and Criminal Justice* 457 (2014), pp. 1–8
10. G. White, M.D. Porter, and L. Mazerolle. "Terrorism Risk, Resilience, and Volatility: A Comparison of Terrorism in Three Southeast Asian Countries". In: *Journal of Quantitative Criminology* 29.2 (2013), pp. 295–320
11. Brian J Reich and Michael D Porter. "Discussion of Estimating the historical and future probabilities of large terrorist events". In: *The Annals of Applied Statistics* 7.4 (2013), pp. 1871–1875
12. M.D. Porter and G. White. "Self-exciting hurdle models for terrorist activity". In: *The Annals of Applied Statistics* 6.1 (2012), pp. 106–124
13. Michael D. Porter and Brian J. Reich. "Evaluating temporally weighted kernel density methods for predicting the next event location in a series". In: *Annals of GIS* 18.3 (2012), pp. 225–240
14. Michael D. Porter, Gentry White, and Lorraine Mazerolle. "Evidence-Based Counterterrorism Policy". In: *Evidence-Based Counterterrorism Policy*. Ed. by Cynthia Lum and Leslie W. Kennedy. Springer New York, 2012. Chap. Innovative Methods for Terrorism and Counterterrorism Data, pp. 91–112
15. M.D. Porter and R. Smith. "Network Neighborhood Analysis". In: *IEEE Int. Conf. on Intelligence and Security Informatics (ISI)*. Vancouver, B.C., 2010, pp. 31–36
16. J.B. Neimi, M.D. Porter, and B.J. Reich. "Mixture Likelihood Ratio Scan Statistic for Disease Surveillance". In: *Advances in Disease Surveillance* 5 (2008), p. 1
17. Michael D. Porter and Donald E. Brown. "Detecting local regions of change in high-dimensional criminal or terrorist point processes". In: *Computational Statistics & Data Analysis* 51.5 (2007), pp. 2753–2768

In Progress

18. G. White, F. Ruggeri, and M.D. Porter. "Endogenous and Exogenous Effects in Contagion and Diffusion Models of Terrorist Activity"
19. H. Li and M. D. Porter. "A Fast Two Stage Anomaly Detection Method for Large Dynamic Networks"
20. Y. Liao and M. D. Porter. "The Predictability of Highway Crash Hotspots"
21. C. Posey et al. "Predictive Based Model Selection for Detecting Insider Cyber Security Threats"
22. G.W. White and M.D. Porter. "Contagion and Diffusion Models for the Dynamics of Terrorist Activity". Under Contract with CRC Press

Other

- 2017 Porter, M.D. (2017) "Multivariate Hawkes Point Process Models for Social Systems", Proceedings of the 62nd World Statistics Congress of the International Statistical Institute.
- 2016 Porter, M.D., Das T., and Zhang, R. (2016) "Predictive Crash Analytics", Technical Report, CAPS (Center for Advanced Public Safety), University of Virginia.
- 2015 Porter, M.D. and Reich, B.J. (2015) "crimelinkage: Statistical Methods for Crime Series Linkage", CRAN. (Open source software and user manual).
- 2014 Porter, M.D. and Reich, B.J. (2014) "Statistical Methods for Crime Series Linkage". The National Institute of Justice Technical Report.
- 2011 White, G., Porter, M.D. and Mazerolle, L. (2011). "The Volatility and Risk of Terrorist Incidents: A Comparative Study Using Self-Exciting Models". Chapter 5 In *Modeling the Effectiveness of Counter-Terrorism Strategies in Indonesia, the Philippines, and Thailand*. A START/CEPS research report.

White, G., Mazerolle, L., and Porter, M.D. (2011). “Modeling Counter-Terrorism Interventions and their Relative Effectiveness”. Chapter 7 In *Modeling the Effectiveness of Counter-Terrorism Strategies in Indonesia, the Philippines, and Thailand*. A START/CEPS research report.

Porter, M.D. and Holland, B. (2011). “Discovering Temporal Association between Two Types of Events”. GeoEye Analytics Technical White Paper.

2010 Porter, M.D. (2010). “Multivariate Change Detection”. GeoEye Analytics Technical White Paper.

2009 Ghosh, S.K. and Porter, M.D. (2009). “Spatio-Temporal Modeling of Health Related Incidents”. Report to Centers for Disease Control and Prevention (CDC).

Dalton, J.R. and Porter, M.D. (2009). “Geospatial Preference Models in Signature Analyst”. SPADAC Technical White Paper.

Porter, M.D. (2009). “Modeling Site Selection Behavior: Applications to Crime and Terrorism”. In JSM Proceedings. Alexandria, VA: American Statistical Association, 5284-5293.

2007 Porter, M.D. (2007). “Probability Estimates for Footwear Evidence”.

2006 Porter, M.D. (2006). “Detecting Space-Time Anomalies in Point Process Models of Intelligent Site Selection”. Doctoral Dissertation, University of Virginia. Dissertations & Theses University of Virginia database. (Publication No. AAT 3225959).

FUNDING

2016–2018	\$119,996	Center for Advanced Public Safety , University of Alabama (PI) <i>Predictive Crash Analytics</i>
2016–2017		Alabama Medicaid (Advisor) <i>Establishing a baseline distribution of risk scores for provider up-coding and fraud detection</i>
2015–2016	\$15,000	Culverhouse College of Business , University of Alabama <i>Grant Incubator Program</i>
2011–2013	\$551,656	National Institute of Justice (PI) <i>Statistical Methods for Spatio-Temporal Crime Series Linkage</i>
2007–2008	\$50,000	Centers for Disease Control and Prevention (co-PI) <i>Anomaly Detection in Space and Time</i>

SOFTWARE

- R **crimelinkage**: a set of tools to help crime analysts and researchers with tasks related to crime linkage. This package includes methods for criminal case linkage, crime series identification and clustering, and suspect identification.

CONFERENCE PRESENTATIONS

- 2017 “Understanding and Evaluating Predictive Crash Models”. SAMSI Summer Program on Transportation Statistics, Aug 14-18, Duke University.
 “Point Process Models for Social Systems”. ISI World Statistics Congresses, Jul 16-21, Marrakesh, Morocco.
- 2016 “Crime Linkage with Self-Exciting Point Process Models”. Joint Statistical Meetings, Jul 30 – Aug 4, Chicago, IL.
- 2015 “Statistical Methods for Crime Series Linkage”. International Association of Crime Analysts Training Conference (IACA), Sept 20-25, Denver, CO.
 “A Statistical Approach to Crime Linkage”. Joint Statistical Meetings, Aug 8 - 13, Seattle, WA.

- Media Coverage: (i) <http://www.forensicmag.com/news/2015/08/not-just-hunch-new-software-uses-stats-solve-predict-burglary-experts-say> (ii) Software identifies ‘missing link’, Police Professional, (20 Jan 2016)
- 2014 “Interval-Censoring Methods for Aoristic Crime Analysis”. Joint Statistical Meetings, Aug 2- 7, Boston, MA.
- 2013 “An Interval Censoring Approach for Aoristic Analysis”. American Society of Criminology Annual Meeting (ASC) Nov 19-23, Atlanta, GA.
 “Statistical Crime Linkage: Case Linkage, Crime Series Identification, and Clustering”. International Association of Crime Analysts Training Conference (IACA), Sept 9-13, Fort Lauderdale, FL.
 “Discussion of Clauset and Woodard: Estimating the Historical and Future Probabilities of Large Terrorist Events”. Joint Statistical Meetings, Aug 3- 8, Montreal, Canada. (Invited Discussant for “Annals of Applied Statistics” session.)
- 2012 “Identifying suspects, discovering new offenders and linking crimes: Crime series identification using model-based clustering”. American Society of Criminology Annual Meeting (ASC) Nov 14-17, Chicago, IL.
 “Self-Exciting Hurdle Models for Terrorist Activity”. Joint Statistical Meetings, Jul 28-Aug 2, San Diego, CA. (Invited “Best of the Annals of Applied Statistics” session.)
 “Weighted Kernel Density for Predicting the Location of the Next Event in a Series”. Quantitative Methods in Defense and National Security (QMDNS), May 1, George Mason University
- 2011 “Bayesian Crime Series Linkage Analysis”. American Society of Criminology Annual Meeting (ASC) Nov 16-19, Washington, D.C.
 “Bayesian Crime Series Linkage Analysis”. NIJ Crime Mapping Conference (MAPS), Oct 19-21, Miami, FL.
 “StoNA: Structure to Network Activity”. HSCB Focus 2011, Feb 8-10, Chantilly, VA. (Dalton, J., Porter, M.D., Abrams, M., and Valore, J.)
- 2010 “Self-exciting Hurdle Models for Terrorism”. AMS Fall Western Section Meeting, Oct 9-10, Los Angeles, CA.
 “Is Terrorism Contagious? Modeling Indonesian Terrorism with Self-Exciting Hurdle Models”. Joint Statistical Meetings, Aug. 1-5, Vancouver, BC.
 “Discovering Terrorist Subgroups with Network Neighborhood Analysis”. Quantitative Methods in Defense and National Security, May 25-26, George Mason University.
 “Network Neighborhood Analysis”. IEEE Intelligence and Security Informatics, May 23-26, Vancouver, BC. (Smith, R. and Porter, M.D.)
- 2009 “Modeling Site Selection Behavior: Applications to Crime and Terrorism”. Joint Statistical Meetings, Aug. 1-6, Washington, D.C.
- 2008 “Mixture Likelihood Ratio Scan Statistic for Disease Outbreak Detection”. International Society for Disease Surveillance (ISDS) annual conference, Dec 3-5, Raleigh, NC. (Neimi, J.B., Porter, M.D., and Reich, B.J.)
 “Probability Estimates for Footwear Evidence”. NC IAI Fall Conference, October 2-3, Atlantic Beach, NC.
 “Probability Estimates for Footwear Evidence”. International Association for Identification 93rd International Educational Conference, August 17-23, Louisville, KY.
 “A Martingale Methodology for the Quick Identification of Point Process Anomalies”. INTERFACE 2008, May 21-24, Durham, NC.
- 2007 “An Adaptive Methodology for the Quick Identification of Space-Time Anomalies”. INFORMS annual meeting, Nov 4-7, Seattle, WA.
 “The Search for Spatial and Spatio-Temporal Anomalies”. Army Conference on Applied Statistics, Oct 17-19, Rice University.
 “Some adaptive approaches for space-time anomaly detection”. First International Workshop in Sequential Methodologies, July 22-25, Auburn University.

- “Change detection for space-time Poisson point processes with applications to defense and homeland security”. Spring Research Conference on Statistics in Industry and Technology, May 21-23, Iowa State University.
- “Anomaly Detection in Space-Time Point Processes”. 32nd Spring Lecture Series, Spatial and Spatio-Temporal Statistics, Apr. 12-14, University of Arkansas.
- “Anomaly Detection in Space-Time (and higher dimensional) Point Processes”. Quantitative Methods in Defense and National Security, Feb. 7-8, George Mason University.
- 2006 “Modeling the Interaction between Intelligent Site Selection and Other Stochastic Processes with Applications to Terrorism”. Joint Statistical Meetings, Aug. 6-10, Seattle, WA. (Robinson, C.D., Porter, M.D., and Brown, D.E.)
- 2005 “Feature Selection, Prediction, and Change Detection in Terrorist/Insurgency Processes Using a Spatial Point Process Approach”. Knowledge Fusion Research Workshop, Nov. 29- Dec. 1, Annapolis, MD.
- “Detecting Changes in Criminal or Terrorist Processes”. SAMSI National Defense and Homeland Security Kickoff Workshop, Sept. 11-14, RTP, NC.
- “Finding Changing Crime Regions: Use of High Dimensional Geographic Feature Space and Classification Trees”. Proceedings of the Eighth Crime Mapping Research Conference, Sept. 7-10, Savannah, GA.
- 2003 “A Modified Response Surface Methodology for Knowledge Discovery: Optimization via Functional Approximation”. Poster Presentation. Winter Simulation Conference, Dec. 7-10, New Orleans, LA.
- “Obsolescence Management Decision Making in a Life-Cycle Extension”. Proceedings of Third COG Conference. May 19-22, 2003, Glasgow, Scotland.
- 2002 “Functional Discovery to Enable Confident Change”. Proceedings of Fifteenth International Conference on Systems Engineering. August 6-8, 2002, Las Vegas, NV. pp. 273-277. (Tomlinson, J., Porter, M.D., and Mahaffey, W.R.)

OTHER TALKS

- 2018 *Modeling contagion, excitation, and social influence with Hawkes point processes*. University of Virginia, Data Science Institute, April 17, 2018.
- 2015 *Self-exciting Hurdle Models for Terrorist Activity*. Mississippi State University, Statistics Seminar, April 7, 2015.
- 2014 *Predictive Crime Analytics*. Cambridge, MA, Aug 11-12 2014.
- 2013 *Statistical Crime Series Linkage*. The University of Alabama, Applied Statistics Seminar, Sept 30, 2013.
- Self-exciting Hurdle Models for Terrorist Activity*. The University of Alabama, Applied Statistics Seminar, Feb 20, 2013.
- Analyzing Terrorist Attack Patterns with Self-exciting Models*. Daniel Rose Yale Technion Counterterror Research Initiative Seminar, Feb 26, 2013 Yale University.
- 2011 *Self-exciting Hurdle Models for Terrorism: Understanding the Risk of Indonesian Terrorist Attacks*. University of Louisville, Mathematics Colloquium, Mar 4, 2011.
- 2008 *Regression and Least Squares: A Matlab Tutorial*. SAMSI/CRSC Undergraduate Workshop, N.C. State University, Raleigh, NC., May 19 – 23, 2008.
- Cluster Detection in Geographic Sensor Networks*. SAMSI Undergraduate Workshop, RTP, NC. February 29-March 1, 2008.
- 2007 *Intelligent Site Selection Models for Asymmetric Threat Prediction and Decision Making*. SAMSI Undergraduate Workshop, Durham, NC, November 9-10, 2007.
- The Search for Spatial and Spatio-Temporal Anomalies*. Virginia Tech, Department of Statistics, August 30, 2007.

- Which targets are next? Modeling Intelligent Site Selection with Applications to Terrorism.* Applications of Statistical Modeling and Simulation, University of Delaware, April 27, 2007.
- Anomaly Detection in Space-Time (and higher dimensional) Point Processes.* North Carolina State University, Department of Statistics, February 22, 2007.
- Intelligent Site Selection and Anomaly Detection.* ADAC Lab, North Carolina State University, Department of Electrical and Computer Engineering, February 15, 2007.
- 2006 *Anomaly Detection in Space-Time (and higher dimensional) Point Processes.* University of South Carolina, Department of Statistics, October 26, 2006.
- Anomaly Detection in Space-Time Point Processes.* Ninth Meeting of New Researchers in Statistics and Probability, August 1-5, 2006, Seattle, WA.
- Using Marked Spatial Point Process Models to Detect Change in Intelligent Site Selection Processes.* University at Buffalo, Department of Systems and Industrial Engineering, April 3, 2006.
- Using Point Process Residuals in Space-Time Anomaly Detection.* SAMSI Anomaly Detection Working Group Meeting, March 23, 2006.

TEACHING

University of Virginia

- SYS 4055 | *Systems Engineering Design Colloquium II*: Fa 18
- SYS 3055 | *Systems Engineering Design Colloquium I*: Fa 18

University of Alabama

- ST 697 | *Advanced Statistical Learning*: Sp 14, Fa 15, Fa 17
- ST 597 | *Introduction to Data Analytics*: Sp 15, Sp 16, Sp 17
- ST 591 | *Introduction to Statistical Learning*: Fa 16, Su 17
- ST 560 | *Statistical Methods*: Fa 15, Fa 16
- ST 554 | *Mathematical Statistics I*: Fa 16, Fa 17
- ST 260 | *Statistical Data Analysis*: Fa 13, Sp 14, Fa 14, Sp 15, Sp 16, Sp 18

North Carolina State University

- ST 516 | *Experimental Statistics for Engineers II*: Sp 08
- ST 515 | *Experimental Statistics for Engineers I*: Fa 06, 07
- ST 371 | *Probability and Distribution Theory*: Sp 07

SERVICE ACTIVITIES

- 2017–2018 | Guest editor International Journal of Forecasting special edition: *Forecasting for Social Good*
- 2016–2018 | Technology Research Advisory Committee, University of Alabama
- 2015–2018 | Medicaid Research Committee, Culverhouse College of Commerce
- 2016–2018 | Business Analytics Steering Committee, Culverhouse College of Commerce
- 2014–2016 | MS-Business Analytics Committee, ISM Dept, University of Alabama
- 2013–2016 | Research Advisory Committee, University of Alabama
- 2013–2014 | Secretary/Treasurer of the American Statistical Association Section on Defense and National Security (ASA-SDNS)
- 2013+ | Grant reviewer for National Institute of Justice (NIJ) Graduate Research Fellowship (2013, 2016)
- 2009–2010 | Publications Officer of the American Statistical Association Section on Defense and National Security (ASA-SDNS)

- 2007+ | Program committee for Quantitative Methods in Defense and National Security (QMDNS) conference (2007, 2010, 2012)
- 2005+ | Article reviews for JASA, CSDA, Annals of Applied Statistics, International Journal of Forecasting, Biostatistics, Biometrics, IEEE Transactions on SMC, Mathematical and Computer Modeling, Forest Science, Annals of GIS, Crime Mapping, Journal of Quantitative Criminology, Int. J. of Information Technology and Decision Making, NetCrime, Decision Sciences, Applied Geography, Legal and Criminological Psychology.

OTHER ACTIVITIES

- 2014 | Statistical Training: Predictive Crime Analytics Workshop, Aug 11-12, Cambridge, MA. Led two-day workshop on geospatial predictive methods for crime analysts.
- 2007–2008 | Director of VIGRE Undergraduate Research Project: Examining Footwear Evidence for Identification
- 2008 | Session organizer “Spatial Risk Mapping: Prediction and Change Detection”, Interface 2008, Durham, NC, May 2008.
- 2007 | Attended IPAM Crime Hot Spots: Behavioral, Computational and Mathematical Models
- 2006 | Session organizer “Prediction and Detection in Defense and Homeland Security Applications”, Joint Statistical Meetings Seattle, WA, August 2006

AWARDS

- 2007 | Louis T. Rader Outstanding Ph.D. Student Award, awarded by the Department of Systems and Information Engineering, University of Virginia, Charlottesville
- 2006 | Winner of the Student Paper Competition for ASA Section on Statistics in Defense and National Security (ASA-SDNS)
- 2005 | NSF travel award for NATO ASI (Advanced Study Institute): Multisensor Data and Information Processing for Rapid and Robust Situation and Threat Assessment
- 2005 | Travel award for the Eighth Crime Mapping Research Conference, Savannah, GA.
- 2005 | Travel award for the SAMSI National Defense and Homeland Security Kickoff Workshop, RTP, NC.