

Samuel H. Huddleston
Senior Data Scientist,
Biocore, LLC
shuddleston@biocorellc.com

EDUCATION

University of Virginia, Charlottesville, VA
Ph.D. in Systems and Information Engineering 2011-2013
Dissertation: Geographic Probability Algorithms with Security Force Applications
M.S. in Systems Engineering 2006-2008
Thesis: The Statistical Threat Assessment

The United States Military Academy, West Point, NY
B.S. in Mechanical Engineering (Aerospace) 1994-1998
Honor Graduate (GPA greater than 3.5 in military, physical, and academic domains)

TEACHING EXPERIENCE

Naval Postgraduate School, Monterey, CA 2016-2019
Assistant Professor, Department of Operations Research
Primary instructor for five courses: Machine Learning, Computational Methods for Data Analytics (Data Engineering for Data Scientists), Case Studies in (Big Data) Analytics, Computational Methods for Operations Research (Python Programming for OR), and Probability and Statistics for Systems Engineers. Manage the NPS Online Data Science Certificate Program and Resident OR Department Data Analytics Sequence.

United States Military Academy, West Point, NY 2008-2011
Assistant Professor, Department of Systems Engineering
Primary instructor for four systems engineering courses: Introduction to Systems Engineering, Foundations of Engineering Design and Systems Management, Statistics for Engineers (Course Director), and the Professional Engineering Seminar.

RELATED EXPERIENCE

Biocore, LLC, Charlottesville, VA 2019 - Present
Senior Data Scientist
I conduct applied research and product development for improving player health and safety in professional and amateur sports. My work includes developing novel methods for sensor fusion, predictive modeling (machine learning) for injury prevention, design of experiments, and simulation modeling to support prescriptive changes to sports rules and equipment.

Naval Postgraduate School, Monterey, CA 2017 -2019
Co-Founder and Technical Director, Data Science and Analytics Group (DSAG)
Founded; secured \$2M in research, education, and advisory consulting funding; developed curriculum for and authored the Naval Postgraduate School strategic initiatives for Artificial Intelligence (AI), Data Science, and Analytics. The DSAG provides research support, advisory consulting, short courses, executive education, an online certificate program in Data Science, and resident degree programs in order to facilitate the development of a data science and analytics capability within Department of Defense (DoD) organizations.

Center for Army Analysis, Fort Belvoir, VA 2013 -2015
Senior Operations Research Analyst, Operational Assessments Division
Founded the Army's first Data Science teams. Key projects included supporting the development of a big-data analytics platform for US Army Cyber Command (ARCYBER); targeting criminal and terror networks in a Defense Intelligence Agency (DIA) sponsored, multi-agency intelligence effort (this research won the MORS Rist Prize for 2016), and developing the software application used to manage the intelligence targeting process for Operation Inherent Resolve (OIR).

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NATO Special Operations Component Command (NSOCC-A), Kabul, Afghanistan

Chief of Assessments, Commander's Initiatives Group (CIG)

2014

Responsible for providing the Commander of NSOCC-A and Special Operations Joint Task Force – Afghanistan (SOJTF-A) with advanced quantitative analysis to support decision-making, planning, staff process improvements and optimal use of resources.

U.S. Army Infantry and Armor: Colorado, Alaska, Egypt, and Iraq

Commander, Leader, and Staff Officer

1998-2006

Spent eight years leading soldiers and serving as a staff officer in Infantry and Armor units, to include deployments to Egypt and Iraq. Served as the primary planner for two national elections in Ninevah Province and Mosul, Iraq. Commanded a Stryker Reconnaissance Troop. Other roles included Brigade Personnel Officer (Human Resources Manager), Squadron Logistics Officer, Troop Executive Officer, Scout Platoon Leader, and Tank Platoon Leader.

REFEREED PUBLICATIONS AND BOOK CHAPTERS

- Huddleston, S.H. and G.G. Brown. "Machine Learning," In J. Cochran (Ed.), *INFORMS Analytics Body of Knowledge*, Hoboken, NJ: Wiley, 2018.
 - Huddleston, S.H., J.H. Porter and D.E. Brown. "Improving Forecasts for Noisy Geographic Time Series," *The Journal of Business Research*. Vol. 68, Issue 8, 2015.
 - Huddleston, S.H. and D.E. Brown. "Using Discrete Event Simulation to Evaluate Time Series Forecasting Methods for Security Applications," *Proceedings of the 2013 Winter Simulation Conference*. 2013.
 - Zhang, Y., S.H. Huddleston, D.E. Brown and G.P. Learmonth. "A Comparison of Evaluation Methods for Police Patrol District Design," *Proceedings of the 2013 Winter Simulation Conference*. 2013.
 - Huddleston, S.H., M. Gerber, and D.E. Brown. "Geographic Profiling of Criminal Groups for Military Cordon and Search." *Proceedings of the 2013 Social Computing, Behavioral-Cultural Modeling and Prediction Conference*. 2013.
 - Huddleston, S.H., J. Fox and D.E. Brown. "Mapping Gang Spheres of Influence." *Crime Mapping: A Journal of Research and Practice*. Vol. 4, Issue 2, 2012.
 - J. Fox, S.H. Huddleston, and D.E. Brown. "Investigating a Bayesian Hierarchical Framework for Feature-Space Modeling of Criminal Site-Selection Problems." *Proceedings of the 23rd Midwest Artificial Intelligence and Cognitive Science Conference*. 2012.
 - Dabkowski, M.F., S.H. Huddleston, P. Kucik and D.S. Lyle. "Shaping Senior Leader Officer Talent: Using a Multi-Dimensional Model of Talent to Analyze the Effect of Personnel Management Decisions and Attrition on the Flow of Army Officer Talent Throughout the Officer Career Model." *Proceedings of the 2011 Winter Simulation Conference*. 2011.
 - Asman, B.D., M.H. Kim, R.A. Moschitto, J.C. Stauffer and S.H. Huddleston. "Methodology for Analyzing the Compromise of a Deployed Tactical Network." *Proceedings of the 2011 Systems and Information Engineering Design Symposium*. 2011.
 - Dabkowski, M.F., S.H. Huddleston, P. Kucik and D.S. Lyle. "Shaping Senior Leader Officer Talent: How Management Decisions and Attrition Impact the Flow of Army Officer Talent Throughout the Officer Career Model." *Proceedings of the 2010 Winter Simulation Conference*. 2010.
 - Huddleston, S.H. and D.E. Brown. "A Statistical Threat Assessment." *IEEE Transactions on Systems, Man, and Cybernetics Part A – Systems and Humans*. Vol. 39, No. 6, 2009.
 - Fox, J. and S.H. Huddleston. "Mathematical Literacy as a Fundamental Component of Training Cyber-Warriors: Moving Beyond the Tools and Towards Fishing." *Nexus Journal Online*. Vol. 1, Issue 1, 2008.
 - Huddleston, S.H. G. Learmonth, and J. Fox. "Changing Knives into Spoons: Examining the Oil-Spot Methodology of Fighting an Insurgency Using Hybrid Agent-Based Modeling." *Proceedings of the 2008 IEEE Systems and Information Engineering Design Symposium*, April, 2008. (Best Paper Award)
 - Huddleston, S.H. et. al. "Statistical Models for Target Detection in Infrared Imagery." *Automatic Target Recognition XVII, Proceedings of the SPIE*. April, 2007
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WHITE PAPERS, TECHNICAL REPORTS, AND PRESENTATIONS

- Huddleston, S.H. “Building Analytic Teams in DoD Organizations,” *Army Operations Research Symposium*, Aberdeen Proving Grounds, MD, United States, 2018.
- Huddleston, S.H. and T. Vanderzee, “Predicting the Spread of Terror Organizations with Graphs”, *86th Military Operations Research Society Symposium*, Military Operations Research Society (MORS), Naval Postgraduate School, Monterey, CA, United States, 2017.
- Huddleston, S.H. and A. Ryan, “Human in the Loop Entity Resolution with R2D2”, *86th Military Operations Research Society Symposium*, Military Operations Research Society (MORS), Naval Postgraduate School, Monterey, CA, United States, 2017.
- Huddleston, S. H., "Data Science for Counter-Terrorism," *Advanced Concepts and Technology for Meeting Current and Future Demands in Public Security*, Graz University of Technology, Graz, Austria, 2017.
- Huddleston, S. H. and I. Kloo, "Practical Entity Resolution," *85th Military Operations Research Society Symposium*, Military Operations Research Society (MORS), United States Military Academy, West Point, NY, United States, 2017.
- Huddleston, S.H. et al., “Data Science for Threat Finance Intelligence”, *84th Military Operations Research Symposium*, 2016. – Winner 2016 MORS Rist Prize
- Kloo, I. and S.H. Huddleston, “Make America Great Again: A methodology for tracking narratives in traditional media”, *84th Military Operations Research Symposium*. 2016 –Finalist for 2017 MORS Barchi Prize
- S.H. Huddleston, “The Data Science of Intelligence Analysis,” *Activity Based Intelligence Workshop*, Military Operations Research Society, McLean, VA, United States, 2016.
- Huddleston, S.H. “Leveraging CSS Models for Military Cordon and Search.” *81st Military Operations Research Symposium*. 2013.
- Huddleston, S.H. “Threat Surface Forecasting.” *81st Military Operations Research Symposium*. 2013
- Huddleston, S.H. et al. *The Warfighter's Guide to Counter-IED Analysis*. JIEDDO Technical Publication. 2010.
- Brown, D.E., J. Fox, S.H. Huddleston, and J. Conklin. *Temporal and Cultural Analysis and Forecasting*. National Technology Alliance, Publication Number: FR-063-013008-452. Arlington, 2008
- Fox, J. and S.H. Huddleston, “Simulating Gang Violence in an Asymmetric Environment.” Winter Simulation Conference, 2007.

STUDENT M.S. THESIS SUPERVISION

- Chia, P., S.H. Huddleston, and R. Yoshida, “Assessing the Robustness of Graph Statistics for Network Analysis Under Incomplete Information,” M.S. Thesis, Naval Postgraduate School, Monterey, CA, 2018.
- Vanderzee, A., S.H. Huddleston, and J. Hammond, “Predicting the Spread of Terrorist Organizations Using Graphs”, M.S. Thesis, Naval Postgraduate School, Monterey, CA, 2018.
- Cline, R., D.L. Alderson, Jr., R. Gera, and S.H. Huddleston, “Understanding Automatic Identification System Data as Applied to Social Network Relationships and Activities,” M.S. Thesis, Naval Postgraduate School, Monterey, CA, 2018.
- Von Eiff, J., R. Koyak, and S.H. Huddleston, “Characterizing Ship Navigation Patterns Using Automatic Identification System (AIS) Data in the Baltic Sea,” M.S. Thesis, Naval Postgraduate School, Monterey, CA, 2018.
- Young, B., R. Koyak, and S.H. Huddleston, “Predicting Vessel Trajectories from AIS Using R,” M.S. Thesis, Naval Postgraduate School, Monterey, CA, 2017.
- Gray, S., T. Lucas, and S.H. Huddleston, “Agent-Based Simulation to Support the Effectiveness, Procurement, and Employment of Non-Lethal Weapon Systems,” M.S. Thesis, Naval Postgraduate School, Monterey, CA, 2017.

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ACADEMIC SERVICE

- Advisor, Data Science and Analytics Working Group, *87th Military Operations Research Symposium*, Ongoing.
 - Chair, Data Science and Analytics Working Group, *86th Military Operations Research Symposium*, 2018.
 - Chair, The Data Science of Intelligence Analysis, *Activity Based Intelligence Workshop*, Military Operations Research Society, 2016.
 - Reviewer, *MORS Journal*, 2016-2018.
 - Reviewer, *Social Computing, Behavioral-Cultural Modeling and Prediction Conference*, 2014-2015.
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ACADEMIC AND TECHICAL AWARDS

- Military Officers Association of America Joint Warfare Service Award (significant academic research contributions to Joint Warfare), 2018.
- Military Operations Research Society Rist Prize (best implemented operations research study in the U.S Department of Defense), 2016.