

Nicholas J. Clark, Ph.D.

Colonel, U.S. Army

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<https://nick3703.github.io>

EDUCATION

Ph.D. Statistics, Iowa State University, 2018.

M.S. Statistics, George Mason University, 2011.

B.S. Mathematical Sciences, United States Military Academy, 2002.

POSITIONS HELD

2022 - Current. Associate Professor, Department of Mathematical Sciences, United States Military Academy.

Program Director, Applied Statistics and Data Science Program, 2022 - Current.

Responsible for 28 sections of 9 courses and directly oversee 12 faculty members. Overall responsible for the administration, development and assessment of the Applied Statistics and Data Science degree at West Point.

2021 - 2022. (Sabbatical) Chief Data Scientist, United States Joint Special Operations Command

Responsible for overseeing all data science projects created by the command. Further was responsible for developing training paths for Soldiers and Civilians within the command. While serving in this role, created the US Army's training pathway in Data Literacy that has now been delivered over 50 times across the world.

2018 - 2021. Assistant Professor, Department of Mathematical Sciences, United States Military Academy

Director of the Center for Data Analysis and Statistics

Responsible for creating a new major in Applied Statistics and Data Science. Also served as director for the primary research center within the department tasked with providing statistics and data science support for the US Army. While serving as director, transitioned the center to generate funding for the Math Department. Through this work, generated over \$250K in reimbursable research dollars. Also served as the course director for two academic courses responsible for rewriting the curriculum to align with the ASA's Guidance for Assessment and Instruction for Undergraduate Statistics.

2015 - 2018. Ph. D. Student, Iowa State University, Ames, Iowa.

Advisor: Philip M. Dixon

2013 - 2015. Intelligence Officer, United States Special Operations Command.

Responsible for over 30 Intelligence Analysts conducting support for national level operations.

2012-2013. Assistant Professor, Department of Mathematical Sciences, United States Military Academy.

Served as director for the Center for Data Analysis and Statistics with primary responsibility for providing statistical consulting to departments within the Academy

2011-2012. Instructor, Department of Mathematical Sciences, United States Military Academy.

Served as instructor for four different undergraduate courses.

2009-2011. Master's student, Department of Statistics, George Mason University.

2002-2009. United States Army.

Intelligence Officer, Special Operations Command.

Intelligence Officer, 3rd Ranger Battalion.

Platoon Leader, South Korea.

TEACHING EXPERIENCE

MA103 (Mathematical Modeling)	Fall 2022
MA205 (Calculus II)	Fall 2011, 2012
MA206 (Probability and Statistics)	Spring 2012, 2013, 2019, Fall 2023
MA376 (Applied Statistics)	Fall, Spring 2018, 2019, 2022
MA476 (Mathematical Statistics)	Spring 2019, 2021, 2023
MA486 (Mathematical Computation)	Fall 2020
MA489 (Bayesian Statistics)	Fall 2019
MA478 (Generalized Linear Models)	Spring 2024

PUBLICATIONS

Refereed Journal Articles and Proceedings

(* Indicates student coauthor)

23. **Clark, N.**, Morrell, C., & Powell, M. (2024). "Assessment and Continuous Improvement of an Undergraduate Data Science Program". *The American Statistician*, 1–20. <https://doi.org/10.1080/00031305.2024.2365673>
22. Macdonald, B., **Clark, N.**, *Hellman, B., Schuckers, M. 2024. "Using Regression Adjusted Plus Minus to Quantify Player Effect in Team Sports." *Foundations for Undergraduate Research in Mathematics*, Accepted.
21. *Hollis, A., Moore, T, Wilson, A., **Clark, N.** 2024. "From FMECA to Decision: A Fully Bayesian Reliability Process." *Military Operations Research*, 29(1), 45-62, January 2024. <https://www.jstor.org/stable/27300955>

20. **Clark, N.** and Dixon, P., 2023. "Extended Laplace Approximation for Self-Exciting Spatio-Temporal Models of Count Data.", *Spatial Statistics*, **56**, 2023. <https://doi.org/10.1016/j.spasta.2023.100762>
19. Smith, M., Turner, D., Spencer, C., Gist, N., Ferreira, S., Quigley, K., Walsh, T., **Clark, N.**, Boldt, W., Espe, J. and Thomas, D.M., 2023. "Body shape and performance on the US Army Combat Fitness Test: Insights from a 3D body image scanner." *Plos One*, **18**(5), May, 2023. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0283566>
18. Thomas, D., Kleinberg, S., Brown, A., Crow, M., Bastian, N., Reisweber, N., Lasater, R., Kendall, T., Shafto, P., Blaine, R., Smith, S., Ruiz, D., Morrell, C., **Clark, N.** 2023. "Machine Learning Modeling Practices to Support the Principles of AI and Ethics in Nutrition Research." *Nutrition & Diabetes*, **12**(1), 1-10. <https://doi.org/10.1038/s41387-022-00226-y>
17. Campa, F., Thomas, D.M., Watts, K., **Clark, N.**, Baller, D., *Morin, T., Toselli, S., Koury, J.C., Melchiorri, G., Andreoli, A., Mascherini, G., Petri, C., Sardinha, L.B., Silva, A.M. 2022. "Reference Percentiles for Bioelectrical Phase Angle in Athletes." *Biology*, **11**, 264. <https://doi.org/10.3390/biology11020264>.
16. *Guiles, B., Galbreath, D., **Clark, N.**, Sikora, T., & Pulleyblank, W. 2022. Forecasting Demand for Medical Screening at West Point. *Military Operations Research*, **27**(2), <https://www.jstor.org/stable/27140355>.
15. **Clark, N.** and Watts, K., 2021. "Identification of Latent Structure in Spatio-Temporal Models of Violence," *Proceedings of the Winter Simulation Conference*, pp. 1-8, <https://doi.org/10.1109/WSC52266.2021.9715406>.
14. Evangelista, P., **Clark, N.**, Dabkowski, M., Kloo, I. 2021. "Modeling and Analysis in Support of Organizational Decisions During the COVID-19 Pandemic." *Industrial and Systems Engineering Review*, **9**(1), 2-14, <https://doi.org/10.37266/ISER.2021v9i1.pp2-14>
13. *Echeveste, D., Lee, A., **Clark, N.**, 2021. "Using Spatial Uncertainty to Dynamically Determine UAS Flight Paths", *Journal of Intelligent and Robotic Systems*, **101**(4), April 2021. <https://doi.org/10.1007/s10846-021-01331-3>
12. **Clark, N.**, Dixon, P., 2021. "A Class of Spatially Correlated Self-Exciting Statistical Models", *Spatial Statistics*, **43** <https://doi.org/10.1016/j.spasta.2021.100493>
11. **Clark, N.**, Dabkowski, M., Driscoll, P., Kennedy, D., Kloo, I, *Shi, H. 2021. "Empirical Decision Rules for Improving the Uncertainty Reporting of Small Sample System Usability Scale Scores", *International Journal of Human-Computer Interaction*, January 2021. <https://doi.org/10.1080/10447318.2020.1870831>
10. *Humphries, S., *Parker, T., Jonas, B., Adams, B., **Clark, N.** 2021. "A Dual U-Net Algorithm for Automating Feature Extraction From Satellite Imagery", *Journal of Defense Modeling and Simulation*, January 2021. <https://doi.org/10.1177/1548512920983549>
9. **Clark, N.**, Macdonald, B. , Kloo, I. 2020. "A Bayesian Adjusted Plus-Minus Analysis for the Esport Dota 2", *Journal of Quantitative Analysis in Sports* **16**(4), 325-341. <https://doi.org/10.1515/jqas-2019-0103>

8. Thomas, D., Sturdivant, R., Dhurandhar, N., Debroy, S., **Clark, N.** 2020. "A primer on COVID-19 Mathematical Models", *Obesity* **28**(8), 1375-1377. <https://doi.org/10.1002/oby.22881>
7. Cummiskey, K., Adams, B., Pleuss, J., Turner, D., **Clark, N.**, Watts, K. 2020. "Causal Inference in Introductory Statistics Courses", *Journal of Statistical Education* **28**(1), 22-8.<https://doi.org/10.1080/10691898.2020.1713936>
6. Thomas, D., **Clark, N.**, Turner, D., Siu, C., Halliday, T., Hannon, B., Kahathuduwa, C., Kroeger, C., Zoh, R., Allison, D., 2019. "Best (but oft-forgotten) practices: Identifying and accounting for regression to the mean in nutrition and obesity research", *American Journal of Clinical Nutrition*, **111**(2). <https://doi.org/10.1093/ajcn/nqz196>
5. Blanchong, J, Anderson, C., **Clark, N.**, Klaver, R., Plummer, P., Cox, M., McAdoo, C., Wolff, P. 2018. "Respiratory Disease, Behavior, and Survival of Mountain Goat Kids" *Journal of Wildlife Management and Wildlife Monographs* **82**(6), 1243-1251. <https://doi.org/10.1002/jwmg.21470>
4. **Clark, N.**, Dixon, P. 2018. "Modeling and Estimation for Self-Exciting Spatio-Temporal Models of Terrorist Activity" *The Annals of Applied Statistics* **12**(1), 633-653. <https://doi.org/10.1214/17-A0AS1112>
Winner of Student Paper Competition sponsored by the Section for Statistics in Defense and National Security (SDNS) of the American Statistical Association, 2017.
3. Rovira, R., Mackie, R., **Clark, N.**, Squire, P., Hendricks, M., Pulido, A., Greenwood, P. 2016. "A Role for Attention During Wilderness Navigation: Comparing Effects of BDNF, KIBRA, and CHRNA4." *Neuropsychology*. **30**(6). <https://doi.org/10.1037/neu0000277>
2. Waterman B., Cameron K., Hsiao M., Langston J., **Clark, N.**, Owens, B., 2013. "Trends in the Diagnosis of SLAP Lesions in the US Military," *Knee Surgical Sports Trauma Arthrosc.* December 2013. <https://doi.org/10.1007/s00167-013-2798-z>
1. **Clark, N.**, Jackson, J., 2012. "Development of Nonlinear Mixed-Effects Models for Assessing Effectiveness of Spending in Iraq," *Military Operations Research* **18**(1). <https://www.jstor.org/stable/24838469>

GRANTS/EXTERNAL FUNDING

National Science Foundation, co-PI (PI, Rebecca Nugent, Carnegie Mellon)

Building a sustainable national network for developing and disseminating Sports Content for Outreach, Research, and Education in data science

2022-2026 :\$1,100,000

Special Operations Command, PI

Automated Feature Extraction

2020-2021: \$50,000

Combat Capabilities Development Center, Armaments Center, PI

Machine Learning to Support Extended Range Cannon Artillery

2019-2020: \$60,000

Army Research Laboratory, PI

Predicting military performance and outcomes from 3D body shape imaging and accelerometry and detecting change points in performance based off of biomonitors

2019-2020: \$20,868

ACADEMIC HONORS AND AWARDS

Recipient, US Army Operational Analysis Award – Modeling and Analysis Support to USMA's Operation RESILIENT KNIGHT, 2021 (COVID Modeling and Support).

The US Army Operational Analysis Award is given annually to the top analytical project done by a military team in support of an Army operational problem.

Recipient, Outstanding Academic Development, Department of Statistics, Iowa State University, 2017.

Designee, Graduate College Emerging Leader, Iowa State University, 2017-2018.

Recipient, Best Paper, Young Researcher Paper Competition, Section for Statistics in National Defense and Security, American Statistical Association, 2017.

GEN Omar N. Bradley Research Fellowship in Mathematics, 2017.

Recipient, Distinguished Academic Achievement awarded to top Master's Student in the Statistics Department, George Mason University, 2011 .

Designee, Distinguished Cadet, USMA 2002.

Phi Kappa Phi Honor Society, 2002.

INVITED PRESENTATIONS

Clark. N *Challenges and Opportunities in Self-Exciting Spatio-Temporal Modeling*, METMA XI - 11th International Conference on Spatio Temporal Modelling, University of Lancaster, Lancaster, UK, July 2024.

Clark. N. *Advancements in Spatially Correlated Self-Exciting Spatio-Temporal Models*, North Carolina State University, Raleigh, NC, February 2024.

Clark, N. *Data Literacy Within the Department of Defense.*, DATAWorks Conference, Springfield, VA, March 2023.

Spotlight talk given at the conference. Talk is available at:
<https://www.youtube.com/watch?v=5oMduzIt5pk&t=1492s>

Sturdivant, R.X. and Clark, N. *Is a sub 2 hour marathon in the near future? Modeling rare events in sports.* Southern Regional Council on Statistics, Jekyll Island, Georgia, 2022.

Clark, N. *Data and the Future of Warfare*, Next Generation Identification and Awareness Symposium - Keynote Address, Massachusetts Institute of Technology, July 2021.

One of two keynote speakers at the annual gathering of Special Operations leaders and technical contractors who have been tasked with building out future military reconnaissance capabilities.

Clark, N. *Spatio-Temporal Modeling of COVID*, DATAWorks Conference, Springfield, VA, March 2021 (Virtual).

Clark, N., Macdonald, B. Kloo, I. *Analyzing Player Performance in eSports*, New England Symposium on Statistics in Sports, Harvard University, Sep 2019.

Clark, N. *Educating Data Literate Army Leaders*, DATAWorks Conference, Springfield, VA, March 2019.

Clark, N., Dixon, P. *Self-exciting spatio-temporal statistical models for count data with applications to modeling the spread of violence*, National Security Agency, Ft. Meade, MD, Feb 2018.

THESIS STUDENTS ADVISED

(* Indicates student obtained graduate fellowship/scholarship)

Graduated

Eli Dabkowski* (Honors Thesis).

Creating a Smarter Army - The Application of Semi-Supervised Learning in Image Classification, 2022-2023 *Draper Fellow, Harvard University.*

Jack Perreault* (Honors Thesis).

Multimodal Data Fusion: Enhancing Image Classification with Text, 2022-2023 *Lincoln Labs Fellow, Boston University.*

Madison McGovern (Honors Thesis).

Using Data Science to facilitate the combination of multiple streams of information, 2022-2023.

Madison Teague (Honors Thesis).

Modeling and Population Estimation of COVID-19 in the Corps of Cadets, 2020-2021.

Reilly McGinnis (Honors Thesis).

Spatio-Temporal Modeling of COVID in US, 2020-2021.

Karlee Scott (Honors Thesis).

Functional Data Ananalysis of Aircraft Flight Patterns, 2020-2021.

Charlie Harrington* (Honors Thesis).

Predictive Modeling of Aircraft Flight Patterns, 2020-2021 *Draper Fellow, Harvard University.*

Trevor Parker (Honors Thesis).

Using Machine Learning to Conduct Automated Feature Extraction, 2019-2020.
2019-2020

Samuel Humphries* (Honors Thesis).

Using Machine Learning to Conduct Automated Feature Extraction, 2019-2020 *Lincoln Labs Fellow, MIT.*

James Pruneski* (Honors Thesis).

Using Machine Learning to Predict Health Outcomes Following HSCT, 2018-2019 *Medical School.*

Bridget Wilby (Honors Thesis).

Analysis of the Cadet Foreign Travel Medical Screening Process, 2018-2019, *Hollis Award Winner.*

Evan Szablowski* (Honors Thesis).

Data Analytics of Cadet Academy Performance, 2012-2013, *Rhodes Scholar, Oxford University.*

PROFESSIONAL SERVICE

Program Evaluator (Data Science Programs), ABET, Applied and Natural Sciences Commission, 2023.

Chair, Statistics in Defense and National Security Section, American Statistical Association, 2023.

Chair, Faculty Hiring Board, Department of Math, West Point, 2023.

Associate Editor, *Military Operations Research Journal*, 2020 - Current.

Member, Department of Mathematical Sciences Ph.D. Selection Committee, 2020.

Member, US Army North Command, COVID Task Force, 2020.

Member, Superintendent's COVID Task Force, 2020.

Chair, Best Paper Competition, Statistics in Defense and National Security Student Paper Competition, 2019-2021.

Member, Technical Program Committee, DATAWorks Conference, (2020, 2023).

Advisor, Distributed Computing Colloquium, 2019-2020

Resulted in 12 US Army Officers designated as "Army Data Scientists"

Session Chair, Joint Statistics Meetings, Vancouver, 2018.

Judge, Best Paper Competition, Statistics in Defense and National Security Student Paper Competition, 2018.

Established and Led Faculty Colloquium on Bayesian Statistics (2012, 2018).

Established and Led Faculty Colloquium on Data Mining, 2013.

Session Chair, ARL-USMA Technical Symposium, Atlantic City, 2011.

Peer Reviewer, *Journal of Quantitative Analysis in Sports*, *Public Health Nutrition*, *Bayesian Analysis*, *PLOS One*, *JRSS-A*, *Journal of Defense Modeling and Simulation*, *Spatial Statistics*, *Entropy*, *JRSS-C*, *Statistica Sinica*

STATISTICAL CONSULTING

Director, Center for Data Analysis and Statistics (CDAS), 2012-2013, 2018-2021.

Clients: Special Operations Command, Army Future's Command, Joint Improvised Threat Defeat Organization, West Point Strategic Planning Department, West Point academic departments (4), Director of Admissions , Keller Army Community Hospital, outside Army Agencies, members of Highland Falls community.

PROFESSIONAL AFFILIATIONS

American Statistical Association (2010-)

Mathematical Association of America (2023-)

Last updated: August 30, 2024

Nicholas J. Clark