Benjamin J. **Radford**

POLITICAL SCIENTIST · DATA SCIENTIST

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Education

Ph.D. in Political Science *Durham, NC*

DUKE UNIVERSITY *2016*

Subfields: Political Methodology and Security, Peace, & Conflict
Dissertation: *Automated Learning of Event Coding Dictionaries for Novel Domains with an Application to Cyberspace*

Committee: Michael Ward (Chair), Kyle Beardsley, Scott de Marchi, and Mark Crescenzi (UNC)

M.A. in Political Science *Durham, NC*

DUKE UNIVERSITY *2013*

B.A. in Mathematics and International Studies *Asheville, NC*

UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE *2010*

Research Interests

Substantive: Security & conflict, cybersecurity, WMD, counter-proliferation, event data, measurement.
Methodological: Machine learning, Bayesian statistics, natural language processing, forecasting & prediction.

Research Experience

Co-founder & Chief Scientist *Alexandria, VA*

LEVELUP RESEARCH, LLC *2018–Present*

Principal Investigator & Principal Data Scientist *Arlington, VA*

DARPA I2O (*Cyber Incident Attribution* PROGRAM), SOTERA DEFENSE SOLUTIONS *2017–2018*

Participant and Evaluator *Arlington, VA*

DARPA PROBABILISTIC PROGRAMMING FOR ADVANCED MACHINE LEARNING SUMMER SCHOOL *2017*

Principal Data Scientist *Arlington, VA*

DARPA I2O (*Network Defense* PROGRAM), SOTERA DEFENSE SOLUTIONS *2016–2018*

Senior Data Scientist *Arlington, VA*

DARPA I2O (*Network Defense* PROGRAM), CAERUS ASSOCIATES *2015–2016*

Peer-Reviewed Publications

"Automated Dictionary Generation for Political Event Coding" *2018*

Accepted at *Political Science Research and Methods*.

"Enemy at the Gates: Variation in Economic Growth from Civil Conflict." *2017*

Journal of Conflict Resolution: 61(10):2105-2129.

with Shahryar Minhas.

Technical and Policy Publications

"Network Traffic Anomaly Detection Using Recurrent Neural Networks" *2017*

Proceedings of the 2017 MSS National Symposium on Sensor & Data Fusion. Available at arXiv:1803.10769.

with Leonardo Apolonio, Antonio Trias, and Jim A. Simpson.

"Anomaly Detection in Cyber Network Data Using a Cyber Language Approach"   *2018*
Prepared for the *2018 ASA Symposium on Data Science and Statistics*. Available at arXiv:1808.10742.
with Bartley D. Richardson, Shawn E. Davis, Keegan Hines, and David Pekarek.

"Sequence Aggregation Rules for Anomaly Detection in Computer Network Traffic"   *2018*
Prepared for the *2018 ASA Symposium on Data Science and Statistics*. Available at arXiv:1805.03735.
with Bartley D. Richardson and Shawn E. Davis.

"Small-scale prediction of IEDs in Afghanistan using split-population duration
regression"   *2015*
Submitted to the Office of Naval Research.
with Andreas Beger and Michael D. Ward.

"Comparing GDELT and ICEWS Event Data"   *2013*
Published online. Available at Research Gate.
with Michael D. Ward, Andreas Beger, Josh Cutler, Matthew Dickenson, and Cassy Dorff.

"The Evolution of US Policy towards Iran's Nuclear Program: Lessons for the Obama
Administration"   *2010*
UNC Asheville Journal of Undergraduate Research.

"Iran Likely to Take Accusatory Stance at CWC Review Conference"   *2008*
WMD Insights (April): 39-43.

"Summary of Recent United Nations Security Council, European Union, and United
States Sanctions Against Iran"   *2008*
WMD Insights (April): 44-50.
with Leonard Spector.

"Algeria, Emirates Plan Nonproliferation-Friendly Nuclear Programs; Egypt Keeps
Fuel Cycle Options Open, Rejects Expanded IAEA Monitoring"   *2008*
WMD Insights (June): 2-7.
with Leonard Spector.

Software

mmtsne   *2017*
A package for estimating *multiple maps t-distributed stochastic neighbor embedding* (multiple maps t-SNE) models in R.
Open source and available on CRAN: https://cran.r-project.org/package=mmtsne

Working Papers

"Multilingual Word Embedding for Zero-Shot Text Classification"   *Working paper*
with Yaoyao Dai.

"Varieties of Authoritarianism and Peace through Trade, 1950-1999"   *Under review*
with Joseph Grieco and Christopher Gelpi.

Works in Progress

"Structural Embedding for Explainable Word Vectors"   *with Yaoyao Dai*
"Forecasting Conflicts in Space and Time with Recurrent CNNs"
"Inferring High-Resolution Latent Social Indicators from Unstructured Data"

Conference Presentations

Conference on New Directions in Analyzing Text as Data	*2018*
Annual Meeting of the American Political Science Association	*2015, 2018*
Military Sensing Symposium, National Symposium on Sensor & Data Fusion	*2017*
Annual Meeting of the International Studies Association	*2015*
Annual Meeting of the Midwest Political Science Association	*2013, 2014, 2015*
Duke-UNC International Relations Workshop	*2014*
Annual Meeting of the Southern Political Science Association	*2013*

Invited Talks

Symposium on Data Science and Statistics, American Statistical Association	*2018*
Conference on Applied Statistics in Defense, American Statistical Association	*2016*

Teaching Experience

Invited Lecture — *Arlington, VA*

GEORGE MASON UNIVERSITY — *Nov. 2017*

CSI 899: *Computational Research and Applications*

Teaching Assistant for Professor Kyle Beardsley — *Durham, NC*

DUKE UNIVERSITY — *2013*

POLSCI 130: *Introduction to Political Inquiry*

Academic Service

Reviewer

POLITICAL SCIENCE RESEARCH & METHODS

INTERNATIONAL STUDIES REVIEW

Discussant

ANNUAL MEETING OF THE AMERICAN POLITICAL SCIENCE ASSOCIATION — *2015*

Panel on Prediction

Grants, Honors, & Awards

Graduate Studies Fellowship, Duke University	*2011–2016*
Graduate School Conference Travel Fellowship, Duke University	*2015, 14, 13*
Finalist, Data Visualization Contest, Duke University	*2013*
Graduated summa cum laude, University of North Carolina at Asheville	*2010*
Top Graduating Math Student, University of North Carolina at Asheville	*2010*
Distinction in International Studies, University of North Carolina at Asheville	*2010*
Finalist, Hasbro NERF *Battle of the Ads*	*2010*