

Benjamin J. Radford

POLITICAL SCIENTIST · DATA SCIENTIST · TS/SCI

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Education

Ph.D. in Political Science

DUKE UNIVERSITY

Durham, NC

2016

Subfields: Political Methodology and Security, Peace, & Conflict

Automated Learning of Event Coding Dictionaries for Novel Domains with an Application to Cyberspace

M.A. in Political Science

DUKE UNIVERSITY

Durham, NC

2013

B.A. in Mathematics and International Studies

UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE

Asheville, NC

2010

Research Experience

Principal Investigator & Principal Data Scientist

DARPA I2O (Cybersecurity Attribution PROGRAM), SOTERA DEFENSE SOLUTIONS

Arlington, VA

2017–Present

Participant and Evaluator

DARPA PROBABILISTIC PROGRAMMING FOR ADVANCED MACHINE LEARNING SUMMER SCHOOL

Arlington, VA

July–Aug., 2017

Principal Data Scientist

DARPA I2O (Network Defense PROGRAM), SOTERA DEFENSE SOLUTIONS

Arlington, VA

2016–2018

Senior Data Scientist

DARPA I2O (Network Defense PROGRAM), CAERUS ASSOCIATES

Arlington, VA

2015–2016

Research Assistant to Professor Michael D. Ward

DUKE UNIVERSITY

Durham, NC

2013–2015

Research Assistant to Professor Joseph M. Grieco

DUKE UNIVERSITY

Durham, NC

2012–2013

Intern

JAMES MARTIN CENTER FOR NONPROLIFERATION STUDIES

Washington, D.C.

2008

Selected Publications

“Automated Dictionary Generation for Political Event Coding”

Conditionally Accepted at *Political Science Research and Methods*.

2018

“Anomaly Detection in Cyber Network Data Using a Cyber Language Approach”

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.

2018

“Sequence Aggregation Rules for Anomaly Detection in Computer Network Traffic”

Prepared for the 2018 ASA Symposium on Data Science and Statistics. Available at arXiv:1805.03735.

with Bartley D. Richardson and Shawn E. Davis.

2018

“Network Traffic Anomaly Detection Using Recurrent Neural Networks”

Proceedings of the 2017 MSS National Symposium on Sensor & Data Fusion.

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

2017

“Enemy at the Gates: Variation in Economic Growth from Civil Conflict.”

Journal of Conflict Resolution.

with Shahryar Minhas.

2017

- “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 via 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>.

Selected 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.

Selected Conferences

- Conference Papers** *Boston, MA*
ANNUAL MEETING OF THE AMERICAN POLITICAL SCIENCE ASSOCIATION *Aug. 2018*
“Automated Dictionary Generation for Political Event Coding”
“Multilingual Word Embedding for Zero-Shot Text Classification”
“Going Ballistic: Nuclear Bursts in North Korea and Outbursts on Twitter”
- Invited Talk** *Reston, VA*
AMERICAN STATISTICAL ASSOCIATION SYMPOSIUM ON DATA SCIENCE AND STATISTICS *May 2018*
“Sequence Aggregation Rules for Anomaly Detection in Computer Network Traffic”
- Conference Paper** *Springfield, VA*
MILITARY SENSING SYMPOSIUM, NATIONAL SYMPOSIUM ON SENSOR & DATA FUSION *Oct. 2017*
“Network Traffic Anomaly Detection Using Recurrent Neural Networks”
- Invited Talk** *Washington, D.C.*
CONFERENCE ON APPLIED STATISTICS IN DEFENSE, AMERICAN STATISTICAL ASSOCIATION *2016*
“Cyber Language: Enhancing Cybersecurity Through Statistical and Natural Language Processing Techniques”

Conference Paper

ANNUAL MEETING OF THE INTERNATIONAL STUDIES ASSOCIATION

"Small-scale prediction of IEDs in Afghanistan using split-population duration regression"

New Orleans, LA

2015

Conference Paper

ANNUAL MEETING OF THE AMERICAN POLITICAL SCIENCE ASSOCIATION

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

San Francisco, CA

2015

Conference Paper

ANNUAL MEETING OF THE MIDWEST POLITICAL SCIENCE ASSOCIATION

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

Chicago, IL

2015

Conference Paper

DUKE-UNC INTERNATIONAL RELATIONS WORKSHOP

"Embargoes and the Regional Small Arms Trade"

Durham, NC

2014

Conference Paper

ANNUAL MEETING OF THE MIDWEST POLITICAL SCIENCE ASSOCIATION

"Varieties of Authoritarianism and Peace through Trade, 1950-1999"

Chicago, IL

2014

Conference Paper

ANNUAL MEETING OF THE MIDWEST POLITICAL SCIENCE ASSOCIATION

"Autocracy Type and Conflict Outcome: Assessing the Relative Performance of Personalist Regimes in War"

Chicago, IL

2013

Conference Paper

ANNUAL MEETING OF THE SOUTHERN POLITICAL SCIENCE ASSOCIATION

"Primed for Defense: How I Learned to Start Worrying and Love the Bomb"

Orlando, FL

2013

Academic Service

Reviewer

POLITICAL SCIENCE RESEARCH & METHODS

2017

Discussant

ANNUAL MEETING OF THE AMERICAN POLITICAL SCIENCE ASSOCIATION

Panel on Prediction

2015

Reviewer

INTERNATIONAL STUDIES REVIEW

2015

Grants, Honors, & Awards

2011–2016 **Graduate Studies Fellowship**, Duke University

Durham, NC

2015, 14, 13 **Graduate School Conference Travel Fellowship**, Duke University

Durham, NC

2013 **Finalist**, Data Visualization Contest, Duke University

Durham, NC

2010 **Graduated summa cum laude**, University of North Carolina at Asheville

Asheville, NC

2010 **Top Graduating Math Student**, University of North Carolina at Asheville

Asheville, NC

2010 **Distinction in International Studies**, University of North Carolina at Asheville

Asheville, NC

2010 **Finalist**, Hasbro NERF *Battle of the Ads*

Teaching Experience

Invited Lecture

GEORGE MASON UNIVERSITY

CSI 899: *Computational Research and Applications*

Arlington, VA

Nov. 2017

Teaching Assistant for Professor Kyle Beardsley

DUKE UNIVERSITY

POLSCI 130: *Introduction to Political Inquiry*

Durham, NC

2013

Programming

- R
- Python
- Scala
- Spark
- \LaTeX
- MapReduce
- Hadoop & HDFS
- SQL

Research Interests

- Machine learning & artificial intelligence
- Statistics
- Deep learning & multitask modeling
- Cybersecurity & cyber conflict
- Forecasting & prediction
- Political methodology
- Information extraction
- Political security and conflict
- WMD & counter-proliferation