# Benjamin J. **Radford**

⌂ benradford.com

## Education

**Ph.D. in Political Science**
*Duke University*

Durham, NC
2016

**M.A. in Political Science**
*Duke University*

Durham, NC
2015

**B.A. in Mathematics and International Studies**
*University of North Carolina at Asheville*

Asheville, NC
2010

## Academic Appointments

**Assistant Professor**
*University of North Carolina Charlotte*

| | |
|---|---|
| Core Faculty, Public Policy Ph.D. Program | 2019–Present |
| Core Faculty, Political Science and Public Administration | 2019–Present |
| Affiliate, School of Data Science | 2020–Present |
| Honors Faculty, Honors College | 2022–Present |

## Professional Experience

**President**
*Radford Consulting, LLC*

Arlington, VA
2018–Present

**President**
*LevelUp Research, LLC*

Alexandria, VA
2018–Present

| | |
|---|---|
| Subject Matter Expert for DARPA *SafeDocs* | 2019–2022 |
| Subject Matter Expert for DARPA *Hybrid Fusion* | 2018–2019 |

**Subject Matter Expert**
*Giant Oak, Inc.*

Arlington, VA
2022–2023

DARPA *INCAS*

**Principal Data Scientist**
*Sotera Defense Solutions (later KeyW Corporation)*

Arlington, VA
2016–2018

DARPA *unnamed cybersecurity attribution program*

**Senior Data Scientist**
*Caerus Associates (later Cybraics, Inc.)*

Arlington, VA
2015–2016

DARPA *Network Defense*

## Refereed Publications

**Radford**, Benjamin J., Yaoyao Dai, Niklas Stoehr, Aaron Schein, Mya Fernandez, and Hanif Sajid (**2023**). "Estimating conflict losses and reporting biases". *Proceedings of the National Academy of Sciences* 120.34, e2307372120. DOI: `10.1073/pnas.2307372120`. eprint: `https://www.pnas.org/doi/pdf/10.1073/pnas.2307372120`. URL: `https://www.pnas.org/doi/abs/10.1073/pnas.2307372120`.

Stoehr, Niklas, **Benjamin J. Radford**, Ryan Cotterell, and Aaron Schein (**2023**). "The Ordered Matrix Dirichlet for State-Space Models". *Proceedings of The 26th International Conference on Artificial Intelligence and Statistics*. Ed. by Francisco Ruiz, Jennifer Dy, and Jan-Willem van de Meent. Vol. 206. Proceedings of Machine Learning Research. PMLR, pp. 1888–1903. URL: `https://proceedings.mlr.press/v206/stoehr23a.html`.

Dai, Yaoyao, **Benjamin J. Radford**, and Andrew Halterman (**2022**). "Political Event Coding as Text-to-Text Sequence Generation". *Proceedings of the 5th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE)*. Abu Dhabi, United Arab Emirates (Hybrid). Association for Computational Linguistics, pp. 117–123.

Hürriyetoğlu, Ali, Osman Mutlu, Fırat Duruşan, Onur Uca, Alaeddin Gürel, **Benjamin J. Radford**, Yaoyao Dai, Hansi Hettiarachchi, Niklas Stoehr, Tadashi Nomoto, Milena Slavcheva, Francielle Vargas, Aaqib Javid, Fatih Beyhan, and Erdem Yörük (**2022**). "Extended Multilingual Protest News Detection - Shared Task 1, CASE 2021 and 2022". *Proceedings of the 5th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE)*. Abu Dhabi, United Arab Emirates (Hybrid). Association for Computational Linguistics, pp. 223–228.

**Radford**, **Benjamin J.** (**2022**). "High Resolution Conflict Forecasting with Spatial Convolutions and Long Short-Term Memory". *International Interactions*, pp. 1–20. doi: `10.1080/03050629.2022.2031182`.

Gao, Jingjing (Graduate Student Co-Author) and **Benjamin J. Radford** (**2021**). "Death by Political Party: The Relationship Between COVID-19 Deaths and Political Party Affiliation". *World Medical & Health Policy* 13, pp. 224–249. doi: `10.1002/wmh3.435`.

Halterman, Andrew and **Benjamin J. Radford** (**2021**). "Few-Shot Upsampling for Protest Size Detection". *Findings of the Association for Computational Linguistics ACL-IJCNLP 2021*, pp. 3713–3720. doi: `10.18653/v1/2021.findings-acl.325`.

**Radford**, **Benjamin J.** (**2021**). "Automated Dictionary Generation for Political Event Coding". *Political Science Research and Methods* 9.1, pp. 157–171. doi: `10.1017/psrm.2019.1`.

**Radford**, **Benjamin J.** (**2021**). "CASE 2021 Task 2: Zero-Shot Classification of Fine-Grained Sociopolitical Events with Transformer Models". *Proceedings of the 4th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE 2021)*, pp. 203–207. doi: `10.18653/v1/2021.case-1.25`.

**Radford**, **Benjamin J.** (**2021**). "Regressing Location on Text for Probabilistic Geocoding". *Proceedings of the 4th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE 2021)*, pp. 53–57. doi: `10.18653/v1/2021.case-1.8`.

**Radford**, **Benjamin J.** (**2020**). "Seeing the Forest and the Trees: Detection and Cross-Document Coreference Resolution of Militarized Interstate Disputes". *Proceedings of AESPEN 2020, LREC 2020*, pp. 35–41.

**Radford**, **Benjamin J.** (**2019**). "Multitask Models for Supervised Protest Detection in Texts". *Working Notes of CLEF 2019* 2380.

Minhas, Shahryar and **Benjamin J. Radford** (**2017**). "Enemy at the Gates Variation in Economic Growth from Civil Conflict". *Journal of Conflict Resolution* 61.10, pp. 2105–2129.

## Reports (Not Refereed)

Richardson, Bartley D., Shawn E. Davis, and **Benjamin J. Radford** (**2018**). "Sequence Aggregation Rules for Anomaly Detection in Computer Network Traffic". Presented at the 2018 ASA Symposium on Data Science and Statistics. url: `https://arxiv.org/abs/1805.03735`.

Richardson, Bartley D., **Benjamin J. Radford**, Shawn E. Davis, Keegan Hines, and David Pekarek (**2018**). "Anomaly Detection in Cyber Network Data Using a Cyber Language Approach". Presented at the 2018 ASA Symposium on Data Science and Statistics. url: `https://arxiv.org/abs/1808.10742`.

**Radford**, **Benjamin J.**, Leonardo Apolonio, Antonio Trias, and Jim A. Simpson (**2017**). "Network Traffic Anomaly Detection Using Recurrent Neural Networks". Presented at the 2017 MSS National Symposium on Sensor & Data Fusion. url: `https://arxiv.org/abs/1803.10769`.

Beger, Andreas, **Benjamin J. Radford**, and Michael D. Ward (**2015**). "Small-scale prediction of IEDs in Afghanistan using split-population duration regression". Prepared for the Office of Naval Research.

Beger, Andreas, Joshua Cutler, Matthew Dickenson, Cassy Dorff, **Benjamin J. Radford**, and Michael D. Ward (**2013**). "Comparing GDELT and ICEWS Event Data". Published online. url: `https://www.researchgate.net/publication/303211430_Comparing_GDELT_and_ICEWS_event_data`.

**Radford**, **Benjamin J.** (**2010**). "The Evoution of US Policy Towards Iran's Nuclear Program: Lessons for the Obama Administration". *UNC Asheville Journal of Undergraduate Research*.

**Radford**, **Benjamin J.** (**2008**). "Iran Likely to Take Accusatory Stance at CWC Review Conference". *WMD Insights* April, pp. 39–43.

**Radford**, **Benjamin J.** and Leonard Spector (**2008**). "Algeria, Emirates Plan Nonproliferation-Friendly Nuclear Programs; Egypt Keeps Fuel Cycle Options Open, Rejects Expanded IAEA Monitoring". *WMD Insigths* June, pp. 2–7.

**Radford**, **Benjamin J.** and Leonard Spector (**2008**). "Summary of Recent United Nations Security Council, European Union, and United States Sanctions Against Iran". *WMD Insights* April, pp. 44–50.

## 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

## External Grants Obtained

| | |
|---|---|
| **Co-PI**. DOD Defense Intelligence Agency. $299,868. | 2023 |
| *UNC Charlotte Intelligence Community Center of Academic Excellence* | |
| **PI**. National Security Agency. $96,334. | 2022 |
| *Forecasting Security Updates to Identify Vulnerable Software* | |
| **Senior/Key Participant**. National Science Foundation. $1,000,000. | 2019 |
| *Building the Federalism Data and Advanced Statistics Hub (F-DASH)* | |

## Internal Grants Obtained

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|---|---|
| **Co-PI**. UNC Charlotte School of Data Science. $15,000. | 2022 |
| *The Evolution of Intellectual Elite's Immigration Attitudes* | |
| **PI**. UNC Charlotte Faculty Research Grant. $8,000. | 2022 |
| *From Protest to Tragedy–Violence Escalation in Space and Time* | |
| **Co-PI**. UNC Charlotte 12-Month Planning Grant. $25,000. | 2020 |
| *Peace And Conflict Innovations Laboratory to Study Computational Propaganda* | |
| **Recipient**. Duke University Graduate Studies Fellowship. | 2011–2016 |
| **Recipient**. Duke University Graduate School Conference Travel Fellowship. | 2013, 14, 15 |

## External Grant Submissions

| | |
|---|---|
| **Co-PI**. NSF AIB. $405,720. | 2022 |
| *Attributing Policies to Actors through Semantic Content Evaluation* | |
| **Co-PI**. Russell Sage Foundation. $50,000. | 2022 |
| *How social scientists learned to stop worrying and love immigration* | |
| **Co-PI**. DARPA. $1,000,000. | 2021 |
| *CANA-Dip: Credibility-Aware Negotiation Agent for Diplomacy* | |
| **Co-PI**. NSF. $1,000,000. | 2021 |
| *PIPP Phase I: Preventing Pre-Emergence of Zoonotic Pathogens: Detection, Evolution, Ecosystems, Social Behavior and Education* | |
| **Co-PI**. NSF. $290,842. | 2021 |
| *The Language of Neighborhoods: A Predictive and Analytical Framework* | |

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|---|---|
| **Co-PI**. DARPA. $1,205,105. | 2020 |
| *eMPiRIC: Modeling Population Response to Information Campaigns* | |
| **Co-PI**. NSF. $19,996,313. | 2020 |
| *'AI for All' Institute: Bringing Diversity in AI Workforce Readiness, Research, and Outreach* | |
| **Co-PI**. DoD. $444,534. | 2020 |
| *TRISS: Task-Oriented Robust Intelligent Assistant for System Safety* | |
| **Co-PI**. William T. Grant Foundation. $996,201. | 2020 |
| *Building the Federalism Data and Advanced Statistics Hub* | |
| **Co-PI**. NCSU Laboratory for Analytic Sciences. $71,314. | 2020 |
| *Improving Translation Rigor via Reinforcement Learning and Machine Translation Quality Estimation* | |
| **Co-PI**. UNC System Research Opportunities Initiative RFP. Budget not required. | 2020 |
| *Machine Intelligence and Security Studies Lab (MISSL)* | |
| **PI**. DARPA Young Faculty Award. Budget not required. | 2019 |
| *Event Graph Inference from Text Corpora* | |
| **Co-PI**. DoD Basic Research Program for HBCU/MI. $658,946. | 2019 |
| *Surveillance, Conflict, and Dissent: New Data, Methods, and Theory for the Information Era* | |
| **Co-PI**. UNC System Research Opportunities Initiative RFP. Budget not required. | 2019 |
| *Peace and Conflict Innovations Laboratory to Study Computational Propaganda* | |
| **Co-PI**. UNC Undergraduate Research Office. $25,238. | 2019 |
| *Introduction to Open Science for Undergraduates: Teaching and Foundations of Transparent and Reproducible Research* | |

## Internal Grant Submissions

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|---|---|
| **PI**. UNC Charlotte Faculty Research Grant. $8,000. | 2020 |
| *Multi-Document Detection of Complex Social Events* | |

## Invited Talks

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|---|---|
| UNC Charlotte CyberDNA | 2021 |
| *Machine Learning Approaches for Cybersecurity Incident Measurement* | |
| Georgia Tech School of Electrical and Computer Engineering | 2019 |
| *Machine Learning Approaches for Cybersecurity Incident Measurement* | |
| DC Digital Analytics | 2018 |
| *Multilingual Text Classification with Multitask Neural Networks* | |
| Symposium on Data Science and Statistics, American Statistical Association | 2018 |
| *Network Traffic Anomaly Detection Using Recurrent Neural Networks* | |
| Conference on Applied Statistics in Defense, American Statistical Association | 2016 |
| *Cyberlanguage: Enhancing cybersecurity through statistical and natural language processing techniques* | |

## Patents Pending

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|---|---|
| *A method of using artificial intelligence to predict the treatability of water* | Pending |
| With Amir Younis Alansari and James E. Amburgey | |

## Working Papers

Atkinson, Mary Layton and **Benjamin J. Radford** (**Manuscript in preparation**). "Measuring the Ideology of Major Laws".

Kustov, Alexander, Yaoyao Dai, **Benjamin J. Radford**, and Candace Miller (**Manuscript in preparation**). "How Social Scientists Learned to Stop Worrying and Love Immigration".

**Radford**, **Benjamin J.**, Mya Fernandez, Hanif Sajid, Niklas Stoehr, and Aaron Schein (**Manuscript in preparation**). "Estimating Wartime Losses from Biased Reports".

Dai, Yaoyao, Jingjing Gao, and **Benjamin J. Radford** (**Under review**). "From Fear to Hate: Sources of Anti-Asian Sentiment During COVID-19".

Han, Dongyun, Abdullah Al Raihan Nayeem, Jason Windett, Yaoyao Dai, **Benjamin J. Radford**, and Isaac Cho (**Under review**). "A Survey on Visualization Approaches in Political Science for Social and Political Factors: Progress to Date and Future Opportunities".

## Conference Presentations

**Annual Meeting of the American Political Science Association**
| | |
|---|---|
| *Measuring the Ideology of Major Laws* | 2022 |
| *How Social Scientists Learn to Stop Worrying and Love Immigration* | 2022 |
| *What is Word Embedding and How Can it Be Useful for Social Science Research* | 2021 |
| *Identifying Party Families with Time Series Multilingual Word Embedding* | 2021 |
| *Automated Dictionary Generation for Political Event Coding* | 2018 |
| *Going Ballistic: Nuclear Bursts in North Korea and Outbursts on Twitter* | 2018 |
| *Improving Multilingual Comparability with Transfer Learning* | 2018 |
| *Big Data for the Dark Side: Mapping the Rebel Alliance* | 2015 |

**Annual Meeting of the Society for Political Methodology**
| | |
|---|---|
| *How Social Scientists Learn to Stop Worrying and Love Immigration* | 2022 |
| *Towards Better Human Annotation* | 2022 |

**CASE Workshop at EMNLP**
| | |
|---|---|
| *Political Event Coding as Text-to-Text Sequence Generation* | 2022 |
| *Extended Multilingual Protest News Detection – Shared Task 1, CASE 2021 and 2022* | 2022 |

**Annual Meeting of the International Studies Association**
| | |
|---|---|
| *Why Do You Dress Like Us?* | 2022 |
| *High Resolution Conflict Forecasting with Spatial Convolutions and Long Short-Term Memory* | 2022 |
| *Tactics of Insurgency and the Micro-Dynamics of IED Use* | 2015 |

**Annual Meeting of the Southern Political Science Association**
| | |
|---|---|
| *From Fear to Hate: Anti-Asian Sentiment During COVID-19* | 2022 |
| *Spatial Predictors of Protest Suppression Events* | 2020 |
| *Multilingual Word Embedding for Zero-Shot Text Classification* | 2019 |
| *Primed for Defense: How I Learned to Start Worrying and Love the Bomb* | 2013 |

**CASE Workshop at ACL-IJCNLP**
| | |
|---|---|
| *Regressing Location on Text for Probabilistic Geocoding* | 2021 |
| *Few-Shot Upsampling for Protest Size Detection* | 2021 |
| *CASE 2021 Task 2: Zero-Shot Classification...* | 2021 |

**Violence Early Warning System (ViEWS) Prediction Competition.**
| | |
|---|---|
| *High-Resolution Conflict Forecasting...* | 2020 |

**Conference on Language Resources and Evaluation, AESPEN Workshop**
| | |
|---|---|
| *Seeing the Forest and the Trees...* | 2020 |

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|---|---|
| **Conference on New Directions in Analyzing Text as Data** | 2018 |
| **Military Sensing Symposium, National Symposium on Sensor & Data Fusion** | 2017 |
| **Annual Meeting of the Midwest Political Science Association** | 2013, 14, 15 |
| **Duke-UNC International Relations Workshop** | 2014 |

# Teaching Experience

## Courses Taught

**Instructor of Record**　　　　　　　　　　　　　　　　Charlotte, NC
*University of North Carolina at Charlotte*　　　　　　　　2019–Present
- PPOL 8101: *Data Management and Basic Analytics*
- GRAD 8009 & 6009: *Data Science for Social Scientific Inquiry*
- GRAD 6101 & 8101: *Linear Regression*
- GRAD 6103 & 8103: *Classificatory Methods & Time Series*
- POLS 2220: *Political Science Research Methods*
- POLS 3154: *Cyberspace & Politics*
- POLS 3700: *Honors Research*
- POLS 3800: *Independent Study*
- POLS 4700: *Honors Thesis*

**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*

## Mentoring

**Dissertation Committee Member.** Robert Pinka.　　　　　In Progress

**Dissertation Committee Member.** Ivan Flores-Martinez.　　2023
*Breaking the Stigma: Uncovering Factors Behind Mistrust of Those with Substance Abuse History*

**Dissertation Committee Member.** Dr. Jingjing Gao.　　　　2022
*Social Media Use in Public Health and Policy Study*

**Honors Thesis Advisor.** Mya Fernandez.　　　　　　　　2022

**Honors Thesis Advisor.** Connor Frunzi.　　　　　　　　2022
*On Autonomous Weapon Systems: Future Proliferation, The Arms Race, And Regulation*

**Honors Thesis Committee Member.** Scott Christensen.　　2021
*A Spatial Analysis of Social Vulnerability, the COVID-19 Pandemic, and Income Gap Loans in Mecklenburg County, North Carolina*

# Service

## Professional Service

**Organizing Committee Member,** The 5th Workshop on Challenges and　2022
Applications of Automated Extraction of Socio-political Events from Text
(CASE 2022).

**Reviewer,** Nonprofit and Voluntary Sector Quarterly　　　　2022

**Reviewer,** Empirical Methods in Natural Language Processing 2022:　2022
*Unsupervised and Weakly-Supervised Methods in NLP*

**Reviewer,** International Interactions　　　　　　　　　　2021

**Reviewer,** American Journal of Political Science　　　　　　2021

**Reviewer,** American Journal of Preventive Medicine　　　　2021

**Program Committee Member, Reviewer,** The 4th Workshop on Challenges　2021
and Applications of Automated Extraction of Socio-political Events from
Text (CASE 2021)  the Association for Computational Linguistics.

**Reviewer,** IEEE/ACM Transactions on Networking　　　　2020

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|---|---|
| **Panel Chair,** UNC Charlotte Cybersecurity Symposium | 2020 |
| **Program Committee Member, Reviewer,** AESPEN LREC 2020 | 2020 |
| **Reviewer,** British Journal of Political Science | 2020 |
| **Chair & Discussant,** SPSA New Approaches in the Study of Terrorism and Civil War | 2020 |
| **Reviewer,** IEEE: Transactions on Network and Service Management | 2019 |
| **Reviewer,** Political Science Research & Methods | 2018 |
| **Discussant,** APSA Panel on Prediction | 2015 |
| **Reviewer,** International Studies Review | |

## University Service

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|---|---|
| **Non-voting Junior Faculty Observer,** Dept. Review Committee (POLS) | 2021−2022 |
| **Department Representative,** Faculty Council (POLS) | 2020−2021 |
| **Author & Grader,** Qualifying Exam Committee (PPOL) | 2020, 21, 22 |
| **Committee Member,** Speakers Committee (SDS) | 2021 |
| **Committee Member,** Awards Committee (POLS) | 2020−2021 |
| **Committee Member,** International Relations Search Committee (POLS) | 2020−2021 |
| **Committee Member,** Curriculum Review Committee (PPOL) | 2020−2021 |
| **Participant,** New Faculty Learning Community | 2019−2020 |
| **Participant,** New Faculty Mentoring Program | 2019−2020 |

## Public Service

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|---|---|
| **Judge,** Northern Virginia Regional Science Fair | 2019 |

# Honors & Awards

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|---|---|
| **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 |

# Professional Memberships

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|---|---|
| American Political Science Association | 2017, 18, 21, 22 |
| Society for Political Methodology | 2017, 18, 21, 22 |
| Linguistic Data Consortium | 2020, 21, 22 |
| Association for Computational Linguistics | 2021, 22 |