

Matthew D. Sweitzer, Ph.D.

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Professional Experience

Sandia National Laboratories – Machine Intelligence and Visualization

Senior Member of Technical Staff
Postdoctoral Appointee
Graduate Technical Intern

September 30, 2022 – *present*
July 30, 2021 – September 30, 2022
July 26, 2019 – July 30, 2021

Sandia National Laboratories – Energy Water System Integration

Graduate Technical Intern

May 6, 2019 – July 26, 2019

- Led the development and testing of a new network layout algorithm and analytic measure for testing communicative vibration theory and the prediction of social group stability; predictions tested with random forests and deep neural networks.
- Established a natural language processing pipeline incorporating multiple methods and visualized results into a live interactive analysis tool.
- Programmed agent-based models of disinformation flow and integrated both reinforcement learning agents and Bayesian hyperparameter optimization.
- Presented methods and results at project funding meetings, symposia, and scientific conferences.

Technical Skills

Programming Languages:

Python, R, SQL, Bash, Groovy, Javascript, Rust, HTML, CSS, and L^AT_EX

Machine Learning and Data Analytic Methods:

pytorch, scikitlearn, ERGM-family and other methods for network analysis and simulation, time-series analysis, and statistical modeling (e.g., regression, Bayes)

Simulation Software:

Mesa, Netlogo, Repast, N2A, and Anylogic

High-performance Computing Environments:

Distributed batch processing using Slurm, Torque, Weights & Biases, and Amazon AWS

Other Software/Platforms:

Shiny, plotly, oTree, Breadboard, Amazon Mechanical Turk, Matlab, Stata, and SPSS

Education

2015 – 2021

Ohio State University - Columbus

Ph.D., Communication

Dissertation:

“Selection homophily in dynamic political communication networks:
An interpersonal perspective.”

Committee:

Dr. Robert Bond (Chair, School of Communication)

Dr. Skyler Cranmer (Political Science)

Dr. William Eveland, Jr. (School of Communication)

Dr. Hillary Shulman (School of Communication)

2015 – 2019

Ohio State University - Columbus

M.A., Communication

2008 – 2012

University of Missouri - Columbia

B.A., Communication, with honors

Peer-Reviewed Publications

- Sweitzer, M. D.** & Gunda, T. (*forthcoming*). Spatiotemporal analyses of news media coverage on “nuclear waste”: A natural language processing approach. *Nuclear Technology*.
- Sweitzer, M. D.**, Gunda, T., & Gilligan, J. M. (2023). Water narratives in local newspapers within the United States. *Frontiers in Environmental Science - Water and Wastewater Management*, 11. doi:10.3389/fenvs.2023.1038904
- Coronel, J. C., Ott, J., Hubner, A., **Sweitzer, M. D.**, & Lerner, S. (2023). How are competitive framing environments transformed by person-to-person communication? An integrated social transmission, content analysis, and eye movement monitoring approach. *Communication Research*, 50(1), 3-29. doi:10.1177/0093650220903596
- Bayer, J. B., **Sweitzer, M. D.**, Xiang, H., Mohan, S., & Meyers, E. (2022). Reimagining the personal network: The case of Path. *Social Media & Society*, 8(3) 1-17. doi:10.1177/20563051221119475
- Bond, R. M., & **Sweitzer, M. D.** (2022). Political homophily in a large-scale online communication network. *Communication Research*, 49(1), 93-115. doi:10.1177/0093650218813655
- Shulman, H. C., **Sweitzer, M. D.**, Bullock, O. M., Coronel, J. C., Bond, R. M., & Poulsen, S. (2022). Predicting vote choice and election outcomes from ballot wording: The role of processing fluency in low information direct democracy elections. *Political Communication*, 39(5), 652-673. doi:10.1080/10584609.2022.2092920
- Coronel, J. C., Bullock, O. M., Shulman, H. C., **Sweitzer, M. D.**, Bond, R. M., & Poulsen, S. (2021). Eye movements predict large-scale voting decisions. *Psychological Science*, 32(6), 836-848. doi:10.1177/0956797621991142
- Hubner, A., McKnight, J. M., **Sweitzer, M. D.**, & Bond, R. M. (2021). Down to a r/science: Integrating computational approaches to the study of credibility on Reddit. *Computational Communication Research*, 3(1), 91-115. doi:10.5117/CCR2021.1.004.HUBN
- Coronel, J. C., Poulsen, S., & **Sweitzer, M. D.** (2020). Investigating the generation and spread of numerical misinformation: A combined eye movement monitoring and social transmission approach. *Human Communication Research*, 46(1), 25-54. doi:10.1093/hcr/hqz012
- Holt, L. F., & **Sweitzer, M. D.** (2020). More than a black and white issue: Ethnic identity, social dominance orientation, and support for the Black Lives Matter movement. *Self and Identity*, 19(1), 16-31. doi:10.1080/15298868.2018.1524788
- Melamed, D., Simpson, B., Harrell, A., Munn, C. W., Abernathy, J., & **Sweitzer, M. D.** (2020). Homophily and segregation in cooperative networks. *American Journal of Sociology*, 125(4), 1084-1127. doi:10.1086/708142
- Sweitzer, M. D.**, & Shulman, H. C. (2018). The effects of metacognition in survey research: Experimental, cross-sectional, and content-analytic evidence. *Public Opinion Quarterly*, 82(4), 745-768. doi:10.1093/poq/nfy034
- Coronel, J. C., & **Sweitzer, M. D.** (2018). Remembering political messages in dynamic information environments: Insights from eye movements. *Human Communication Research*, 44(4), 374-398. doi:10.1093/hcr/hqy006
- Shulman, H. C., & **Sweitzer, M. D.** (2018). Advancing framing theory: Designing an equivalency frame to improve political information processing. *Human Communication Research*, 44(2), 155-175. doi:10.1093/hcr/hqx006
- Shulman, H. C., & **Sweitzer, M. D.** (2018). Varying metacognition through public opinion questions: How language can affect political engagement. *Journal of Language and Social Psychology*, 37(2), 224-237. doi:10.1177/0261927X17707557

Peer-Reviewed Conference Proceedings

- Gunda, T., & **Sweitzer, M. D.** (2022). A natural language processing tool to support stakeholder engagements during a consent-based siting process. In *International High-Level Radioactive Waste Management Conference Proceedings*. La Grange Park, IL: American Nuclear Society. Retrieved from
- Sanchez, D., Hackett, K., **Sweitzer, M. D.**, & Gunda, T. (2022). Tag it: A natural language processing approach to enhancing delineation of public comments regarding the consent-based siting process. In *International High-Level Radioactive Waste Management Conference Proceedings*. La Grange Park, IL: American Nuclear Society.
- Doyle, C., Naugle, A., Bernard, M., Lakkaraju, K., Kittinger, R., **Sweitzer, M. D.**, & Rothganger, F. (2020). Group formation theory at multiple scales. In R. Thomson, H. Bisgin, C. Dancy, A. Hyder, & M. Hussain (Eds.), *Social, Cultural, and Behavioral Modeling, SBP-BRiMS 2020* (pp. 171-181). Springer. doi:10.1007/978-3-030-61255-9_17

Berkemer, S. J., Cheong, S. L., Edgerton, J., Kogan, M., Laishram, R., Pacheco, A. R., Shannon, A., **Sweitzer, M. D.**, & Wang, X. (2019). A study on public transport mobility flows in Singapore. In *2018 Complex Systems Summer School Proceedings*, (pp. 22). Santa Fe, NM: Santa Fe Institute. Retrieved from https://wiki.santafe.edu/images/9/9d/Proceedings_2018_v2.pdf

Gunda, T., **Sweitzer, M. D.**, Comer, K. T., Finn, C., Murillo-Sandoval, S., & Huff, J. (2019). Evolution of water narratives in local U.S. newspapers: A case study of Utah and Georgia. In *2018 Complex Systems Summer School Proceedings*, (pp. 9). Santa Fe, NM: Santa Fe Institute. Retrieved from https://wiki.santafe.edu/images/9/9d/Proceedings_2018_v2.pdf

Conference Presentations

- Conference on Data Analysis (CoDA) 2023
Detecting effective influence campaigns: Integrated theory-based modeling and data analysis of strategy, persuasion, and action
 Naugle, A., Krofcheck, D., Doyle, C., Sorensen, A., **Sweitzer, M. D.**, & Link, H.
Longitudinal Analysis of Public Input for Consent-Based Siting: A Case Study of Human-Machine Teaming
 Gunda, T., Sanchez, D. N., **Sweitzer, M. D.**, & Rogers, A. N.
Predicting action from topic, sentiment, and emotional content of forum posts
 Doyle, C., Naugle, A., Krofcheck, D., **Sweitzer, M. D.**, & Sorenson, A.
- International High-Level Radioactive Waste Management Conference 2022
A natural language processing tool to support stakeholder engagements during a consent-based siting process
 Gunda, T., & **Sweitzer, M. D.**
Tag it: A natural language processing approach to enhancing delineation of public comments regarding the consent-based siting process
 Sanchez, D., Hackett, K., **Sweitzer, M. D.**, & Gunda, T.
- International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS) 2022
A complex, integrative agent-based model of disinformation cascades
Sweitzer, M. D., Lakkaraju, K., Wiryadinata, S., Lehrer, G., & Naugle, A.
A simulation test bed for evaluating data analytic predictors of disinformation flow
 Lakkaraju, K., **Sweitzer, M. D.**, Wiryadinata, S., Lehrer, G., & Naugle, A.
- International Conference on Computational Social Science 2022
Using social simulations to train, test, and evaluate models for social prediction
 Lakkaraju, K., Naugle, A., **Sweitzer, M. D.**, Wiryadinata, S., & Lehrer, G.
- National Communication Association (NCA) Annual Convention 2020
Retracing the Path of personal network curation into social media
 Bayer, J. B., **Sweitzer, M. D.**, Xiang, H., Mohan, S., & Myers, E.
- International Conference on Social Computing, Behavioral-Cultural Modeling, & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS) 2020
Group formation theory at multiple scales
 Doyle, C., Naugle, A., Bernard, M., Lakkaraju, K., Kittinger, R., **Sweitzer, M. D.**, & Rothganger, F.
- International Conference on Complex Systems (ICCS) 2020
Communicative vibration: A graph-theoretic approach to group stability in an online social network
Sweitzer, M. D., Kittinger, R., Doyle, C., Naugle, A., Lakkaraju, K., Rothganger, F., & Verzi, S.
- Association for Education in Journalism and Mass Communication (AEJMC) Annual Conference 2020
Transforming science information via person-to-person communication: Insights from experimental transmission chains and eye movements
 Hubner, A., Coronel, J. C., Ott, J., **Sweitzer, M. D.**, & Lerner, S.

- International Communication Association (ICA) Annual Convention 2020
Explaining how people vote on ballot initiatives with language difficulty and metacognition: Results from two ecological experiments
 Shulman, H. C., **Sweitzer, M. D.**, Bullock, O. M., Coronel, J. C., Bond, R. M., & Poulsen, S.
- Examining how stereotypes cue double-standards for Blacks and women in news*
 Holt, L. F., & **Sweitzer, M. D.**
- Thinking reflectively or intuitively: How cognitive reflection moderates the effect of language complexity on abstention*
 Poulsen, S., Coronel, J. C., **Sweitzer, M. D.**, Bullock, O. M., Shulman, H. C., & Bond, R. M.
- National Communication Association (NCA) Annual Convention 2019
Choice homophily in political discussion networks: Evidence from formal dynamic models of the selectivity function
Sweitzer, M. D.
- Investigating how person-to-person communication transforms frames: A combined social transmission, content analysis, and eye movement monitoring approach (top paper)*
 Coronel, J. C., Ott, J., **Sweitzer, M. D.**, Hubner, A., & Lerner, S.
- International Communication Association (ICA) Annual Convention 2019
Using eye movements to determine when laboratory findings can be generalized to naturalistic settings: Linguistic features of messages and real-world voting behaviors
 Coronel, J. C., Bullock, O., Shulman, H. C., **Sweitzer, M. D.**, Bond, R. M., & Poulsen, S.
- American Geophysical Union (AGU) Fall Meeting 2018
Evolution of water narratives in local U.S. newspapers
 Witte, A., Hornberger, G. M., Gunda, T., Gilligan, J., & **Sweitzer, M. D.**
- American Political Science Association (APSA) Annual Meeting 2018
Political homophily in a large-scale online communication network
 Bond, R. M., & **Sweitzer, M. D.**
- Association for Education in Journalism and Mass Communication (AEJMC) Annual Conference 2018
More than a black and white issue: Racialized identity and support for Black Lives Matter
 Holt, L. F., & **Sweitzer, M. D.**
- International Communication Association (ICA) Annual Convention 2018
Political homophily in a large-scale online communication network
 Bond, R. M., & **Sweitzer, M. D.**
- Down to a r/science: Integrating computational approaches to the study of communication on Reddit*
 Bond, R. M., Hubner, A., McKnight, J., & **Sweitzer, M. D.**
- The generation and spread of numerical misinformation: A combined eye movement and social transmission approach*
 Coronel, J. C., Poulsen, S., & **Sweitzer, M. D.**
- National Communication Association (NCA) Annual Convention 2017
Survey of surveys: A content analysis of the language complexity in public opinion polls
Sweitzer, M. D., & Shulman, H. C.
- Political Networks (PolNet) Conference 2017
Partisan network selection: Theoretical and agent-based models of homophilic political discussion networks
Sweitzer, M. D., & Bond, R. M.
- International Communication Association (ICA) Annual Convention 2017
Eye movements as measures of memory in communication research (top paper)
 Coronel, J. C., & **Sweitzer, M. D.**
- National Communication Association (NCA) Annual Convention 2016
Advancing framing theory: Using frames to improve public opinion via metacognition
 Shulman, H. C., & **Sweitzer, M. D.**

American Political Science Association (APSA) Annual Meeting	2016
<i>Television news content predicts political knowledge</i>	
Sweitzer, M. D. , & Bond, R. M.	
<i>Using structural topic models to assess television news content</i>	
Bond, R. M., & Sweitzer, M. D.	

Research Grants

<i>Miller Research Award</i> , \$17,288.87 - Ohio State University, School of Communication	2018
Principal Investigator: Jason Coronel	

Honors and Awards

<i>Walter Lippmann Best Article of the Year Award</i>	2021
for “Investigating the generation and spread of numerical misinformation”	
American Political Science Association – Political Communication Section	
<i>Best Paper Award</i> for “More than a black and white issue”	2020
The International Society for Self and Identity	
<i>Doris Gildea Morgan Scholarship Award</i> (senior researcher award)	2019
The Ohio State University School of Communication	
<i>Top Paper Award</i> for “Investigating how person-to-person communication transforms frames”	2019
National Communication Association – Political Communication Division	
<i>Walter B. Emery Memorial Scholarship Award</i> (junior researcher award)	2018
The Ohio State University School of Communication	
<i>Top Paper Award</i> for “Eye movements as measures of memory in communication research”	2017
International Communication Association – Communication, Science, & Biology Division	
<i>Travel Award</i>	2017
International Communication Association – Communication, Science, & Biology Division	
<i>Graduate Fellowship Award</i>	2017
Political Networks Conference	
<i>Honors Society Member</i>	2011–present
Lambda Pi Eta National Communication Honors Society, Chi Beta chapter	
<i>Edward and Ellen Kniep Memorial Scholarship</i>	2008 – 2012
University of Missouri	
<i>John and Virginia Sutherland Scholarship</i>	2008 – 2012
University of Missouri	

Invited Talks

<i>Research Industry Career Opportunities after Grad School</i>	2023
University of New Mexico – Communication and Journalism Department	

Service

International Communication Association - Political Communication Division
<i>Invited Reviewer</i> (Autumn 2017, 2018, 2019, 2020)
International Communication Association - Computational Methods Group
<i>Invited Reviewer</i> (Autumn 2020)
National Communication Association - Political Communication Division
<i>Invited Reviewer</i> (Spring 2018, 2019, 2020)
Ohio State University School of Communication
<i>Peer Mentor</i> (Autumn 2018–Spring 2019)

Ohio State University School of Communication - Graduate Student Organization
Treasurer (Autumn 2016–Summer 2017)

Additional Training

<i>Machine Learning & Deep Learning Workshops</i> Sandia National Laboratories	June 25 – July 28, 2022
<i>Complex Systems Summer School</i> Santa Fe Institute	June 10 – July 6, 2018
<i>Workshops on social network analysis</i> Political Networks Conference	June 14 – 15, 2017
<i>Workshops on structural equation modeling</i> Statistical Horizons and The Ohio State University, School of Communication	August 8 – 9, 2016
<i>Graduate teaching workshops</i> The Ohio State University, University Center for the Advancement of Teaching	August 15 – 17, 2015

Academic Appointments

The Ohio State University

Teaching

<i>Social Media</i> – Instructor of Record no evaluation data	Summer 2021
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Jason Coronel</i> ; Student evaluation: 5.00/5	Spring 2021
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Jason Coronel</i> ; Student evaluation: 4.44/5	Fall 2020
<i>Communication Industry Research Methods</i> – Instructor of Record Student evaluation: 4.64/5	Summer 2020
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Olga Kamenchuk</i> ; Student evaluation: 4.67/5	Spring 2019
<i>Communication Industry Research Methods</i> – Laboratory Instructor <i>Dr. Olga Kamenchuk</i> ; Student evaluation: 4.05/5	Fall 2018
<i>Persuasive Communication</i> – Instructor of Record Student evaluation: 4.74/5	Spring 2016
<i>Crisis Communication</i> – Teaching Assistant <i>Dr. Lanier Holt</i> ; no evaluation data	Fall 2015

Graduate Research Associate

<i>Dr. Robert Bond</i>	Fall 2016 – Summer 2017, Spring 2020
<i>Dr. David DeAndrea</i>	Fall 2019
<i>Dr. Lanier Holt</i>	Fall 2017 – Spring 2018
<i>Dr. Jason Coronel</i>	Summer 2016, Summer 2018

Professional Memberships

International Society for Computational Social Science (ISCSS)	Member, 2022 – <i>present</i>
International Communication Association (ICA)	Member, 2017 – <i>present</i>
National Communication Association (NCA)	Member, 2016 – <i>present</i>
American Political Science Association (APSA)	Member, 2016 – <i>present</i>

Professional References

Dr. Thushara Gunda
Sandia National Laboratories
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Dr. Robert Bond (advisor)
School of Communication
The Ohio State University
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Dr. William Eveland, Jr. (committee)
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The Ohio State University
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Dr. Asmeret Naugle
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Dr. Hillary Shulman (committee)
School of Communication
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