

# Alan E. Mishler

Department of Statistics & Data Science  
Carnegie Mellon University  
Pittsburgh, PA 15213

Email: [alan@alanmishler.com](mailto:alan@alanmishler.com)  
Website: <https://alanmishler.com>  
LinkedIn: [www.linkedin.com/in/alanmishler](http://www.linkedin.com/in/alanmishler)

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## Research interests

Causal inference · Algorithmic fairness · Semiparametric inference · Machine learning

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## Education

Current	PhD student in Statistics & Data Science, Carnegie Mellon University (ABD as of July, 2020; expected graduation in May, 2021)
05/2017	MS in Statistics, Carnegie Mellon University
08/2016	BS in Mathematics, University of Maryland
04/2009	BA in Linguistics, <i>summa cum laude</i> , minor in Japanese, University of Michigan

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## Employment

06/19–08/19	<b>Data Scientist Intern:</b> Google Developed improved methodology to estimate ads lift/incrementality using combined experimental and observational data, with both empirical and theoretical results.
06/18–08/18	<b>Data Scientist Intern:</b> Google Built a machine learning pipeline to probabilistically match entities in text with entries in a database.
05/17–08/17	<b>Graduate Data Science Intern, Business Analytics:</b> Box, Inc. Built a machine learning pipeline to automatically identify new marketing and sales leads. Designed, trained, and tested a variety of classifiers using a range of algorithms, feature sets, and performance metrics. Implemented the final classifier in production.
09/10–08/16	<b>Senior Faculty Research Specialist:</b> University of Maryland Center for Advanced Study of Language Designed, conducted, and analyzed experiments in areas such as topic modeling, signal detection, decision making, cognitive control, bilingualism, and speech perception. Presented research milestones and results to U.S. Government clients. First author on 10 technical reports to the U.S. Government.
09/11–08/13	<b>Consultant Phonetician:</b> SRI International Helped develop guidelines for the transcription of Japanese-accented English, toward the development of an automated pronunciation feedback system for native Japanese learners of English. Worked with four other phoneticians to build a transcription database of Japanese-accented English. Conducted phone alignment in Arabic for the development of Arabic speech recognition software.
8/09–9/10	<b>Post-Baccalaureate Research Fellow:</b> University of Maryland Department of Linguistics

Designed and conducted research on syntactic processing during reading and listening, using eye tracking and EEG.

5/09–8/09 Research Assistant, University of Michigan Department of Linguistics, Phonetics Lab

5/06–9/06 Research Assistant, University of Colorado Center for Spoken Language Research

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## Research

### *Manuscripts in progress*

- 2020 **Alan Mishler**, Edward H. Kennedy. (2020). Fairness in risk assessment instruments: post-processing to achieve counterfactual equalized odds. *Arxiv preprint*. <https://arxiv.org/abs/2009.02841>.

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### *Peer-reviewed publications*

- 2020 Ashley I. Naimi, **Alan E. Mishler**, Edward H. Kennedy. (2020). Challenges in obtaining valid causal effect estimates with machine learning algorithms. *American Journal of Epidemiology (under review)*. <https://arxiv.org/abs/1711.07137>.
- 2020 Amanda Coston, **Alan Mishler**, Edward H. Kennedy, Alexandra Chouldechova. (2020). Counterfactual risk assessments, evaluation, and fairness. *Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency*. <https://doi.org/10.1145/3351095.3372851>.
- 2019 **Alan Mishler**, Edward H. Kennedy, Amanda Coston, Alexandra Chouldechova. (2019). Modeling risk and achieving algorithmic fairness using potential outcomes. *Proceedings of the 2019 AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society*. <https://doi.org/10.1145/3306618.3314323>.
- 2018 Erica B. Michael, Petra Bradley, **Alan Mishler**, Lelyn D. Saner, Brook Hefright, Ann Zeng, Joseph H. Danks. (2018). Human use of machine translation to extract information from texts. In Isabel Lacruz (ed.), *Innovation and expansion in translation process research*. Amsterdam: John Benjamins Publishing Company. <https://www.jbe-platform.com/content/books/9789027264756-ata.18.09mic>.
- 2017 **Alan Mishler**, Kevin Wonus, Wendy Chambers, Michael Bloodgood. (2017). Filtering tweets for social unrest. *Proceedings of the 2017 IEEE 11th International Conference on Semantic Computing (ICSC)*. <https://doi.org/10.1109/ICSC.2017.75>.
- 2016 J. Isaiah Harbison, **Alan Mishler**, Thomas Wallsten. (2016). Modeling triage decision making. *Proceedings of the 38th Annual Conference of the Cognitive Science Society*. <https://cogsci.mindmodeling.org/2016/papers/0421/index.html>.
- 2016 Erika K. Hussey, J. Isaiah Harbison, Susan E. Teubner-Rhodes, **Alan Mishler**, Kayla Velnoskey, Jared M. Novick. (2016). Memory and language improvements following cognitive control training. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. <https://dx.doi.org/10.1037/xlm0000283>.

- 2016 Susan Teubner-Rhodes, **Alan Mishler**, Ryan Corbett, Llorenc Andreu, Monica Sanz-Torrent, John Trueswell, Jared Novick. (2016). The bilingual advantage: conflict monitoring, cognitive control, and garden-path recovery. *Cognition* 150: 213–231. <http://dx.doi.org/10.1016/j.cognition.2016.02.011>.
- 2013 Brian Dillon, **Alan Mishler**, Shayne Sloggett, Colin Phillips. (2013). Contrasting interference profiles for agreement and anaphora: experimental and modeling evidence. *Journal of Memory and Language* 69(2): 85–103. <http://dx.doi.org/10.1016/j.jml.2013.04.003>.
- 2012 Charles Chang, **Alan Mishler**. (2012). Evidence for language transfer leading to a perceptual advantage for non-native listeners. *Journal of the Acoustical Society of America* 132(4): 2700–10. <http://dx.doi.org/10.1121/1.4747615>.
- 2008 **Alan Mishler**. (2008). The discourse of voicemail. *Hermes Journal of Linguistics* 40: 167–197. <https://doi.org/10.7146/hjlc.v21i40.96790>.

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### *Peer-reviewed presentations*

- 2020 **Alan Mishler**. (2020). Achieving Counterfactual Fairness in Risk Assessment Instruments. Talk given at the CMU Symposium on AI and Social Good. <https://www.youtube.com/watch?v=V9NUCCrRZac>.
- 2019 **Alan Mishler**, Niccolo Dalmasso. (2019). When the Oracle Misleads: Modeling the Consequences of Using Observable Rather than Potential Outcomes in Risk Assessment Instruments. Paper/poster presented at Neural Information Processing Systems Workshop “*Do the right thing*”: machine learning and causal inference for improved decision making. Vancouver, Canada. [https://cpb-us-w2.wpmucdn.com/sites.coecis.cornell.edu/dist/a/238/files/2019/12/Id\\_92\\_final.pdf](https://cpb-us-w2.wpmucdn.com/sites.coecis.cornell.edu/dist/a/238/files/2019/12/Id_92_final.pdf).
- 2019 **Alan Mishler**, Edward H. Kennedy. (2019). Counterfactual Fairness in the Actual World. Poster presented at the *Atlantic Causal Inference Conference*. Montreal, Canada.
- 2018 **Alan Mishler**, Rebecca Nugent. (2018). Clustering students and inferring skill set profiles with skill hierarchies. Poster presented at the *2018 Classification Society Annual Meeting*. Stony Brook, NY.
- 2018 **Alan Mishler**, Edward Kennedy. (2018). Counterfactual prediction and fairness in risk assessment tools. Poster presented at the *2018 Atlantic Causal Inference Conference*. Pittsburgh, PA.
- 2015 **Alan Mishler**, Erin Smith Crabb, Susannah Paletz, Brook Hefright, Ewa Golonka. (2015). Using structural topic modeling to detect events and cluster Twitter users in the Ukrainian crisis. Poster presented at the *17th International Conference on Human-Computer Interaction*. Los Angeles, CA.
- 2015 Erin Smith Crabb, **Alan Mishler**, Susannah Paletz, Brook Hefright, Ewa Golonka. (2015). Reading between the lines: A prototype model for detecting Twitter sockpuppet accounts using language-agnostic processes. Poster presented at the *17th International Conference on Human-Computer Interaction*. Los Angeles, CA.
- 2015 Erin Smith Crabb, **Alan Mishler**, Susannah Paletz, Brook Hefright, Ewa Golonka. (2015). Detecting and clustering sockpuppets in Ukrainian social media: Two computational linguistic proof-of-concepts. Talk given at the *2015 INGRoup [Interdisciplinary Network for Group Research] Conference*. Pittsburgh, PA.

- 2013 Erika Hussey, Isaiah Harbison, **Alan Mishler**, Susan Teubner-Rhodes, Kayla Velnoskey, Jared Novick. (2013). Memory and language improvements following cognitive control training. Poster presented at the *54th Annual Meeting of the Psychonomic Society*. Toronto, Canada.
- 2013 Erika Hussey, Susan Teubner-Rhodes, **Alan Mishler**, Isaiah Harbison, Jared Novick. (2013). Trainability and selective transferability of conflict resolution skills to parsing and non-parsing domains. Paper presented at the *26th CUNY Sentence Processing Conference*. Columbia, SC.
- 2012 Erika Hussey, J. Isaiah Harbison, **Alan Mishler**, Susan Teubner-Rhodes, Jared M. Novick. (2012). Trainability and selective transferability of conflict resolution skills. Poster presented at the *53rd Psychonomic Society Annual Meeting*. Minneapolis, MN.
- 2012 Charles B. Chang, **Alan Mishler**. (2012). The role of canonicity in shaping perceptual biases in speech processing. Paper presented at the *13th Conference on Laboratory Phonology*. Stuttgart, Germany.
- 2012 Lelyn D. Saner, J. Isaiah Harbison, DeLaura Jansen, **Alan Mishler**. (2012). Crowd-sourced ratings yield the same empirical results as trained raters. Poster presented at the *24th Annual Convention of the Association for Psychological Science*. Chicago, IL.
- 2012 Susan E. Teubner-Rhodes, **Alan Mishler**, Ryan Corbett, Llorenc A. Barrachina, Monica Sanz-Torren, John C. Trueswell, Jared M. Novick. (2012). The bilingual advantage: Conflict monitoring, cognitive control, and garden-path recovery. Poster presented at the *25th Annual CUNY Conference on Human Sentence Processing*. New York, NY.
- 2012 **Alan Mishler**. (2012). Domain-initial strengthening in voiceless stops cues word boundary perception in Japanese. Paper presented at the *86th Annual Meeting of the Linguistic Society of America*. Portland, OR.
- 2011 Brian Dillon, **Alan Mishler**, Shayne Sloggett, Colin Phillips. (2011). Contrasting interference profiles for agreement and anaphora: Experimental and modeling evidence. Poster presented at the *24th Annual CUNY Human Sentence Processing Conference*. Stanford, CA.

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### *Technical reports and products*

- 2016 **Alan Mishler**, Timothy Buckwalter, Wendy Chambers, Michael Bloodgood, Kevin Wonus, Paul Rodrigues, Marilyn Maines, Joseph Danks. (2016). *Filtering Tweets for Content Relevant to Social Unrest and Political Instability*. University of Maryland Center for Advanced Study of Language.
- 2016 **Alan Mishler**, Timothy Buckwalter, Kevin Wonus, Michael Bloodgood. (2016). *Computational Cultural Assessment (C2A) Software*. [Python-based software for classifying Arabic tweets as relevant or not to social unrest.] University of Maryland Center for Advanced Study of Language.
- 2016 **Alan Mishler**, Brook Hefright, Susannah B. F. Paletz, Ewa Golonka, Aynoor Ford. (2016). *Using Structural Topic Modeling to study public opinion and detect events*. University of Maryland Center for Advanced Study of Language.
- 2016 **Alan Mishler**, Timothy Buckwalter, Wendy Chambers, Michael Bloodgood, Paul Rodrigues, Marilyn Maines, Joseph Danks. (2016). *Machine classification of social media text along useful sociocultural dimensions*. University of Maryland Center for Advanced Study of Language.

- 2015 Erica B. Michael, Petra Bradley, **Alan Mishler**, Lelyn Saner, Brook Hefright, Ann Zeng, Allison Powell. (2015). *Evaluating the use of machine translation for performing language and analysis tasks*. University of Maryland Center for Advanced Study of Language.
- 2015 **Alan Mishler**, Gregory J. H. Colflesh, Justin Young, Meredith M. Hughes, Susan G. Campbell. (2015). *Assessment of Linguistic Tone Aptitude: Creating a battery based on validity evidence from field testing at DLIFLC*. University of Maryland Center for Advanced Study of Language.
- 2015 Paul Rodrigues, Wendy C. Chambers, Valerie Novak, Susannah Paletz, Jennifer Boutz, Tim Buckwalter, Erin Smith Crabb, Amy Pate, **Alan Mishler**, Joseph Danks, Marilyn Maines, Andrew Volpe, Allyson Slater, Salma Bouziani, Emily Iarocci. (2015). *Identification and machine classification of thematic and demographic factors related to social unrest and political instability*. University of Maryland Center for Advanced Study of Language.
- 2015 Isaiah Harbison, **Alan Mishler**, Thomas Wallsten. (2015). *Triage decision making task: An analyst-relevant outcome measure*. University of Maryland Center for Advanced Study of Language.
- 2014 Erica B. Michael, Brook Hefright, **Alan Mishler**, Petra Bradley. (2014). *Human use of translation technology: Evaluating the use of machine translation for performing language and analysis tasks*. University of Maryland Center for Advanced Study of Language.
- 2014 Susannah B. F. Paletz, Erin Smith Crabb, **Alan Mishler**, Brook Hefright, Ewa Golonka, Alexandria S. Campbell, Michael Maxwell, Marcos A. Garza. (2014). *Putting the human in the loop: Initial findings from sociocultural analysis [of Ukrainian Twitter data related to the Crimea conflict]*. University of Maryland Center for Advanced Study of Language.
- 2014 Ewa Golonka, Brook Hefright, Alexandria S. Campbell, **Alan Mishler**, Susannah B. F. Paletz, Erin Smith Crabb, Michael Maxwell, Marcos A. Garza. (2014). *Putting the human in the loop: Analysis of Language Variation [in Ukrainian Twitter data related to the Crimea conflict]*. University of Maryland Center for Advanced Study of Language.
- 2014 **Alan E. Mishler**, Polly L. O'Rourke, DeLaura M. Jansen, Patrick J. Cushen, Nina S Hsu, J. Isaiah Harbison, Jared M. Novick, Michael F. Bunting. (2014). *Working memory training for improving cognition and language: Impact and lessons learned from U.S. government populations*. University of Maryland Center for Advanced Study of Language.
- 2013 **Alan E. Mishler**, Polly L. O'Rourke, DeLaura M. Jansen, Patrick J. Cushen, Nina S Hsu, J. Isaiah Harbison, Jared M. Novick, Michael F. Bunting. (2013). *Working memory training for improving cognition and language: Impact and lessons learned from military and non-military populations*. University of Maryland Center for Advanced Study of Language.
- 2012 Michael F. Bunting, J. Isaiah Harbison, Polly O'Rourke, Patrick J. Cushen, **Alan E. Mishler**, DeLaura M. Jansen, Amber M. Sprenger. (2012). *Working Memory Training Applied*. University of Maryland Center for Advanced Study of Language.
- 2012 Susan E. Teubner-Rhodes, **Alan Mishler**, Ryan Corbett, Llorenc Andreu, Monica Sanz-Torrent, John C. Trueswell, Jared M. Novick. (2013). *The "bilingual advantage": How does speaking two languages affect cognitive control and language processing abilities?* University of Maryland Center for Advanced Study of Language.
- 2012 Lelyn D. Saner, J. Isaiah Harbison, DeLaura M. Jansen, **Alan Mishler**. (2012). *Crowdsourced ratings yield the same empirical results as trained raters*. University of Maryland Center for Advanced Study of Language.

- 2012 Jared M. Novick, J. Isaiah Harbison, **Alan Mishler**, DeLaura Jansen, Michael F. Bunting. (2012). *Cognitive and Working Memory Training Conference Report*. University of Maryland Center for Advanced Study of Language.
- 2012 Erika Hussey, J. Isaiah Harbison, **Alan Mishler**, Susan Teubner-Rhodes, Jared M. Novick. (2012). *The effect of executive function training on language processing: An interim report*. University of Maryland Center for Advanced Study of Language.
- 2011 **Alan Mishler**, Susan Teubner-Rhodes, Ryan Corbett, Jared Novick. (2011). *The “bilingual advantage”: Does learning a second language improve working memory?* University of Maryland Center for Advanced Study of Language.

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### *Workshops & invited talks*

- 2011 **Alan Mishler**. (2011, December). Working memory training to improve cognition and performance. Invited talks at Joint Base Lewis-McChord and Camp Murray. Tacoma, WA.
- 2011 **Alan Mishler**. (2011, August). Working memory training to improve cognition and performance. Invited talk at Maxwell Air Force Base. Montgomery, AL.
- 2011 **Alan Mishler**. (2011). Eyetracking with children. Session given at the *University of Maryland Winter Storm Language Science Workshop*. College Park, MD.
- 2010 **Alan Mishler**, Susan Teubner-Rhodes, Jared Novick. (2010). Eyetracking methodology: Visual worlds and self-paced reading. Workshop given at the *29th Annual Second Language Research Forum*. College Park, MD.
- 2010 **Alan Mishler**, Erika Hussey. (2010). Eyetracking: Theory and applications. Workshop given at the *University of Maryland Winter Storm Language Science Workshop*. College Park, MD.

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### Teaching

- 2020 Summ. TA, StatDS 225: Introduction to Probability Theory
- 2020 Spring TA, StatDS 731: Foundations of Causal Inference
- 2019 Spring TA, StatDS 226: Introduction to Statistical Inference
- 2018 Fall TA, StatDS 617: Applied Linear Models
- 2018 Spring TA, StatDS 326: Honors Introduction to Statistical Inference
- 2017 Fall TA, StatDS 350: Statistical Computing
- 2017 Spring TA, StatDS 402: Advanced Methods for Data Analysis
- 2016 Fall TA, StatDS 350: Statistical Computing

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### Awards and Honors

- 2019 Travel grant, Conference on Neural Information Processing Systems (NeurIPS).
- 2019 Travel grant, AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society.
- 2018 Best poster award: “Optimized Random Partition Tree-based Kernels,” Convex Optimization Mini-Conference, Carnegie Mellon, Pittsburgh, PA. Co-authors: Benjamin LeRoy, Nicolò Dalmaso.

2017	Winner of the Fall 2017 Citadel Data Open at Carnegie Mellon. (550 student applications, 125 selected to compete; \$20,000 prize). Teammates: Niccolò Dalmasso, Kwangho Kim, Chirag Nagpal.
2017	Best short talk: “Subspace Clustering,” Statistical Machine Learning Mini-Conference, Carnegie Mellon, Pittsburgh, PA.
2009	Post-Baccalaureate Research Fellowship, Cognitive Neuroscience of Language Laboratory, Department of Linguistics, University of Maryland.
2009	Marshall Sahlins Award for best thesis in the social sciences, University of Michigan.
2008	Telluride House Scholarship, Telluride Association, Ann Arbor, MI.
2006	Freeman Asia Scholarship, Kyoto, Japan.
2006	Kyoto Center for Japanese Studies Scholarship, Kyoto, Japan.
2006	University of Michigan Office of International Programs Scholarship, Kyoto, Japan.
2006	University of Michigan Center for Japanese Studies Scholarship, Ann Arbor, MI.
2005	University of Michigan Summer Study Scholarship, Bahia, Brazil.
2005	CIEE Study Abroad Scholarship, Salvador da Bahia, Brazil.
2004	Dean’s Merit Scholarship, University of Michigan.
2004	Shipman Scholarship, University of Michigan.

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## Service and Volunteering

2019-20	Reviewer: “Machine Learning for the Developing World,” 2019 NeurIPS workshop.
2019	Manuscript review for the <i>Annals of Applied Statistics</i> .
2009–2016	<b>Telluride Association:</b> Board member and committee chair for an educational nonprofit devoted to providing opportunities to extraordinary and underprivileged high school students. In charge, with the other board members, of developing the association’s annual operating budget, upholding and modifying its rules and bylaws, and ensuring the long term fiscal viability of the organization. As committee chair, directed the recruitment, applications, and admissions process for the flagship summer programs, the Telluride Association Sophomore Seminar (TASS) and the Telluride Association Summer Program (TASP).
2010–2015	<b>Hiring committees, University of Maryland Center for Advanced Study of Language:</b> Vetted, interviewed, and reviewed candidates for Data Scientist, Research Scientist, and Faculty Specialist positions.

Last updated: October 16, 2020