Alan E. Mishler

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

Email: alan@alanmishler.com
Website: https://alanmishler.com
LinkedIn: www.linkedin.com/in/alanmishler

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, *summa cum laude*, minor in Japanese, University of Michigan

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Employment

06/19–08/19   **Data Scientist Intern**: 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   **Data Scientist Intern**: Google

Built a machine learning pipeline to probabilistically match entities in text with entries in a database.

05/17–08/17   **Graduate Data Science Intern, Business Analytics**: 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   **Senior Faculty Research Specialist**: 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   **Consultant Phonetician**: 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   **Post-Baccalaureate Research Fellow**: 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

Research

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/hjlcb.v21i40.96790.

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.

2020   **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.

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.

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.

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.

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, Niccolò Dalmasso.
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.

Service and Volunteering

2019	Reviewer: "Machine Learning for the Developing World," 2019 NeurIPS workshop.
2019	Manuscript review for the Annals of Applied Statistics.
2009–2016	**Telluride Association**: Board member, and recruitment and applications committee chair, for an educational nonprofit devoted to providing educational opportunities for extraordinary and underprivileged high school students.
2010–2015	**Hiring committees**, **University of Maryland Center for Advanced Study of Language**: Vetted, interviewed, and reviewed candidates for Data Scientist, Research Scientist, and Faculty Specialist positions.

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