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Linguistics Program, Department of English
George Mason University
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Education

Doctor of Philosophy: Linguistics

University of Alberta, 2022
Supervisor: Benjamin V. Tucker
Dissertation: *Acoustic Distance, Acoustic Absement, and the Lexicon*

Master of Science: Linguistics

University of Alberta, 2017
Supervisor: Benjamin V. Tucker

Bachelor of Arts: Double major in English (linguistics emphasis) and Spanish

Minor: Computer Science
Boise State University, 2015
Magna cum laude
Distinguished honors from the Honors College

Employment

George Mason University

Assistant professor (2023 to present)
Linguistics Program, Department of English

University of Washington

Postdoctoral researcher (2021 to 2023)
Department of Linguistics
Duties: 1/3 teaching, 1/3 research, 1/3 directing the UW Phonetics Lab
Supervisor: Richard Wright

Publications

Preprints

Kelley, M. C., Perry, S. J., & Tucker, B. V. (2023). The Mason-Alberta Phonetic Segmenter: A forced alignment system based on deep neural networks and interpolation. arXiv. <https://arxiv.org/abs/2310.15425>

In-progress

Kelley, M. C., & Tucker, B. V. (In prep). Perception and timing of acoustic distance.

Journal publications

Perry, S. J., Kelley, M. C., & Tucker, B. V. (2024). Documenting and modeling the acoustic variability of intervocalic alveolar taps in conversational Peninsular Spanish. *The Journal of the Acoustical Society of America*, 155(1), 294–305. <https://doi.org/10.1121/10.0024345>

Coretta, S., Casillas, J. V., Roessig, S., Franke, M., Ahn, B., Al-Hoorie, A. H., Al-Tamimi, J., Alotaibi, N. E., AlShakhori, M. K., Altmiller, R. M., Arantes, P., Athanasopoulou, A., Baese-Berk, M. M., Bailey, G., Sangma, C. B. A., Beier, E. J., Benavides, G. M., Benker, N., BensonMeyer, E. P., . . . Roettger, T. B. (2023). Multidimensional Signals and Analytic Flexibility: Estimating Degrees of Freedom in Human-Speech Analyses. *Advances in Methods and Practices in Psychological Science*, 6(3), 25152459231162570.

Nenadić, F., Podlubny, R. G., Schmidtke, D., Kelley, M. C., & Tucker, B. V. (2022). Semantic richness effects in isolated spoken word recognition: Evidence from massive auditory lexical decision. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 1–24. DOI: 10.1037/xlm0001208.

Kelley, M. C., & Tucker, B. V. (2022). The recognition of spoken pseudowords. *Language, Cognition, and Neuroscience* 37(9), 1169-1190. DOI: 10.1080/23273798.2022.2053729. Postprint available on University of Washington ResearchWorks.

Kelley, M. C., & Tucker, B. V. (2022). Using acoustic distance and acoustic absence to quantify lexical competition. *The Journal of the Acoustical Society of America*, 151(2), 1367-1379. Also available from the University of Alberta Education and Research Archive.

Kelley, M. C., & Tucker, B. V. (2020). A comparison of four vowel overlap measures. *The Journal of the Acoustical Society of America*, 147(1), 137-145. Also available from the University of Alberta Education & Research Archive.

Tucker, B. V., Brenner, D., Danielson, D. K., Kelley, M. C., Nenadić, F., & Sims, M. (2019). The Massive Auditory Lexical Decision (MALD) database. *Behavior research methods*, 51(3), 1187-1204.

Refereed conference publications

Kelley, M. C. (2023). Acoustic absement in detail: Quantifying acoustic differences across time-series representations of speech data. *Proceedings of the 20th International Congress of Phonetic Sciences*. Available on arXiv.

Wright, R. A., Tucker, B. V., & Kelley, M. C. (2023). The effect of speaker on speech intelligibility. *Proceedings of the 20th International Congress of Phonetic Sciences*.

Perry, S. J., Kelley, M. C., & Tucker, B. V. (2023). Measuring and modelling the duration of intervocalic alveolar taps in Peninsular Spanish. *Proceedings of the 20th International Congress of Phonetic Sciences*.

Bin, L., Kelley, M. C., Aalto, D., Tucker, B. V. (2019). Automatic speech intelligibility scoring of head and neck cancer patients with deep neural networks. *Proceedings of the 19th International Congress of Phonetic Sciences*.

Lorentzen, P., Nenadić, F., Kelley, M. C., & Tucker, B. V. (2019). Massive auditory lexical decision: Investigating performance in noisy environments. *Proceedings of The 11th International Conference on the Mental Lexicon, 1*, e127. <https://doi.org/10.7939/r3-hrnv-sn79>.

Kelley, M. C., & Tucker, B. V. (2018). A comparison of input types to a deep neural network-based forced aligner. *Proc. Interspeech 2018*, 1205-1209, DOI: 10.21437/Interspeech.2018-1115.

Editor-reviewed conference publications

Schnoor, T., Kelley, M. C., Tucker, B. V. (2021). Automatic accentedness rating using deep neural networks. *Proceedings of meetings on acoustics 45*, 060013. Paper available here. [Published in 2022]

Redmon, C., Kelley, M. C., & Tucker, B. V. (2020). The Speech and Language Resource Bank: A central index of resources for speech science research and education. *Proceedings of meetings on acoustics 42*, 060021. Paper available here. [Published in 2022]

Unrefereed conference publications

Perry, S. J., Holko, G., Kelley, M. C., & Tucker, B.V. (2021). Consonants, vowels, and lexical representations: evidence from auditory lexical decision. In Angelica Hernández & Chris Plyley (eds.) *Proceedings of the 2021 annual conference of the Canadian Linguistic Association*, 1-12. Paper available here.

Kelley, M. C., & Aalto, D. (2019). Measuring the dispersion of density in head and neck cancer patients' vowel spaces: The vowel dispersion index. *Proceedings of the Acoustics Week in Canada 2019*. Paper available here.

Nenadić, F., Kelley, M. C., Podlubny, R., Tucker, B. V. (2019). Speech perception and the role of semantic richness in processing. *Proceedings of the Acoustics*

Week in Canada 2019.

Backstrom, D., Kelley, M. C., Aalto, D., Tucker, B. V. (2019). Forced-alignment of the sung acoustic signal using deep neural nets. *Proceedings of the Acoustics Week in Canada 2019.*

Presentations

Presenting author highlighted in bold.

Invited talks

Kelley, M. C. (2024). *Acoustic absence in spoken word recognition*. Colloquium talk presented at the Georgetown University Department of Linguistics (Washington, D.C.).

Invited conference presentations/workshops

Kelley, M. C., Perry, S. J, & Tucker, B. V. (2021). *A_{PhL} Aligner: A Neural Network Forced-Alignment System*. Presented at the 181st Meeting of the Acoustical Society of America (Seattle, WA). Slides available here.

Kelley, M. C. (2019). **Deep learning and wide learning of the comprehension of morphologically complex words: from audio signal to semantics**. Presented at the post-conference tutorial workshops at the International Morphological Processing Conference 2019 (Tübingen, Germany). Jupyter notebook available here.

Conference Presentations

Tucker, B. V., **Nenadić, F.**, Kelley, M. C., & Ford, C. (2023). Effects of acoustic contextual information on spontaneous speech perception. Presented at Current Trends in Psychology 2023 (Novi Sad, Serbia).

Kelley, M. C. (2023). Acoustic absence in detail: Quantifying acoustic differences across time-series representations of speech data. Presented at The 20th International Congress of Phonetic Sciences (Prague, Czechia). Poster available here.

Wright, R. A., Tucker, B. V., & Kelley, M. C. (2023). The effect of speaker on speech intelligibility. Presented at The 20th International Congress of Phonetic Sciences (Prague, Czechia).

Perry, S. J., Kelley, M. C., & Tucker, B. V. (2023). Measuring and modelling the duration of intervocalic alveolar taps in Peninsular Spanish. Presented at The 20th International Congress of Phonetic Sciences (Prague, Czechia).

Kelley, M. C., Oganyan, M., & Wright, R. A. Production and perception of novel consonant clusters. Presented at the 184th Meeting of the Acoustical Society of America (Chicago, IL). Poster available here.

Wright, R. A., Kelley, M. C., Oganyan, M., Tucker, B. V. (2022). *Digging into sentence intelligibility: Interactions with noise*. Presented at the 183rd Meeting of the Acoustical Society of America (Nashville, TN).

Tucker, B. V., Kelley, M. C., Oganyan, M., Wright, R. A. (2022). *Digging into sentence intelligibility: Interactions with talker*. Presented at the 183rd Meeting of the Acoustical Society of America (Nashville, TN).

Kelley, M. C., Tucker, B. V. (2022). *Perception and timing of acoustic distance*. Presented at the 182nd Meeting of the Acoustical Society of America (Denver, CO). Poster available here.

Schnoor, T. T., **Kelley, M. C.**, Tucker, B. V. (2021). *Automated accent rating using deep neural networks*. Presented at the 181st Meeting of the Acoustical Society of America (Seattle, WA).

Perry, S. J., Kelley, M. C., & Tucker, B. V. (2021). *The effect of word frequency on Spanish tap reduction in spontaneous speech*. Presented at the Alberta Conference on Linguistics 2021 (online).

Holko, G., Perry, S. J., Kelley, M. C., & Tucker, B. V. (2021). *The processing of consonants and vowels by L2 English/L1 Mandarin listeners*. Presented at the Alberta Conference on Linguistics 2021 (online).

Kelley, M. C., & Tucker, B. V. (2021). *Perception and timing of acoustic distance*. Presented at the Alberta Conference on Linguistics 2021 (online). Slides available here.

Tucker, B. V., Redmon, C., & Kelley, M. C. (2021). *A Place to Share Teaching Resources: Speech and Language Resource Bank*. Presented at the 180th Meeting of the Acoustical Society of America (online).

Perry, S. J., Kelley, M. C., & Tucker, B. V. (2021). The phonetic reduction of Spanish stressed vowels in spontaneous speech. Paper presented at the 51st Linguistic Symposium on Romance Languages, University of Illinois at Urbana-Champaign (online).

Perry, S. J., **Holko, G.**, Kelley, M. C., Tucker, B. V. (2021). *Consonants, vowels, and lexical rerepresentations: evidence from auditory lexical decision*. Presented at the 2021 Annual Meeting of the Canadian Linguistics Association (online).

Kelley, M. C., & Tucker, B. V. (2020). *How do words compete? Quantifying lexical competition with acoustic distance*. Presented at The 179th Meeting of the Acoustical Society of America (online). Poster available here.

Redmon, C., **Kelley, M. C.**, & **Tucker, B. V.** (2020). *Developing a cross-platform federated code repository for speech research*. Presented at The 179th Meeting of the Acoustical Society of America (online).

Perry, S. J., Kelley, M. C., & Tucker, B. V. (2020). Word frequency, predictability, and lexical class influence different aspects of Spanish tonic vowel production. Presented at The 179th Meeting of the Acoustical Society of America (online).

Perry, S. J., Kelley, M. C., Holko, G. & Tucker, B. V. (2020). Lexical processing of consonants and vowels: Mandarin learners of English. Presented at Words in the World International Conference (online).

Kelley, M. C., & Aalto, D. (2019). *Assessing head-and-neck cancer patient speech with the vowel dispersion index*. Presented at the 178th Meeting of the Acoustical Society of America (San Diego, CA). Poster available here.

Siyu, C., **Kelley, M. C.**, Aalto, D., & Tucker, B. V. *Rating speech intelligibility using raw-audio as the input to a deep neural-network*. Presented at the 178th Meeting of the Acoustical Society of America (San Diego, CA).

Kelley, M. C., & Aalto, D. (2019). *Measuring the dispersion of density in head and neck cancer patients' vowel spaces: The vowel dispersion index*. Presented at Acoustics Week in Canada 2019 (Edmonton, AB).

Nenadić, F., Kelley, M. C., **Podlubny, R.**, Tucker, B. V. (2019). *Speech perception and the role of semantic richness in processing*. Presented at Acoustics Week in Canada 2019 (Edmonton, AB).

Backstrom, D., **Kelley, M. C.**, Aalto, D., Tucker, B. V. (2019). *Forced-alignment of the sung acoustic signal using deep neural nets*. Presented at Acoustics Week in Canada 2019 (Edmonton, AB).

Holko, G., Perry, S. J., Kelley, M. C., & Tucker, B. V. (2019). *Perception of unfamiliar english phonemes by native mandarin speakers*. Alberta Academic Review, Vol 2(2) 37-38, WISEST special issue.

Bin, L., Kelley, M. C., Aalto, D., & **Tucker, B. V.** (2019). Automatic speech intelligibility scoring of head and neck cancer patients with deep neural networks. Presented at the International Congress of Phonetic Sciences 2019 (Melbourne, Australia).

Kelley, M. C. & Tucker, B. V. (2019). *A comparison of four vowel overlap measures*. Presented at the 177th Meeting of the Acoustical Society of America (Louisville, KY). Poster available here.

Nenadić, F., **Kelley, M. C.**, & Tucker, B. V. (2019) *Speaker-listener dialect differences and spoken word recognition: Evidence from massive auditory lexical decision*. Presented at the 177th Meeting of the Acoustical Society of America (Louisville, KY).

Kelley, M. C. (2019). An acoustically grounded measure of lexical competition. Presented at the University of Alberta Department of Linguistics 50th Anniversary Undergraduate and Graduate Student Talks event (Edmonton, AB).

Kelley, M. C., Backstrom, D., & Tucker, B. V. (2018). *Applications of Deep Learning for Speech and Singing Recognition*. Presented during the Deep Learning for Sound Recognition roundtable at the Society for Ethnomusicology 63rd Annual Meeting (Albuquerque, NM).

Tucker, B. V., Nenadić, F., & Kelley, M. C. (2018). Auditory lexical decision in the wild. Presented at the 176th Meeting of the Acoustical Society of America (Victoria, BC).

Kelley, M. C. & Tucker, B.V. (2018). *A comparison of input types to a deep neural network-based forced aligner*. Presented at Interspeech 2018 (Hyderabad, India). Poster available here.

Kelley, M. C. (2018). *How acoustic distinctiveness affects spoken word recognition: A pilot study*. Presented at the 11th International Conference on the Mental Lexicon (Edmonton, AB). Slides available here.

Kelley, M. C., Backstrom, D., & Tucker, B. V. (2018). *Applications of Deep Learning for Speech and Singing Recognition*. Presented during the Deep Learning for Sound Recognition panel at the Sound Studies Initiative Sound Symposium 2018 (Edmonton, AB).

Kelley, M. C. (2017). *A comparison of four vowel overlap metrics*. Presented at the Alberta Conference on Linguistics 2017 (Edmonton, AB). Slides available here.

Kelley, M. C. & Tucker, B. V. (2017). *Recognition of spoken pseudowords*. Presented at the Western Conference on Linguistics 2017 (Boise, ID). Slides available here.

Kelley, M. C., Tucker, B.V. (2017). *How do we recognize pseudowords in an audio signal?*. Presented at the 173rd Meeting of the Acoustical Society of America (Boston, MA). Poster available here.

Kelley, M. C. & Tucker, B. V. (2017). *How are pseudowords recognized in an auditory lexical decision task?*. Presented at the Northwest Phonetics and Phonology Conference 2017 (Vancouver, BC).

Kelley, M.C., Morrison, G. S., Tucker, B. V. (2016). *A comparison of vowel overlap metrics*. Presented at the Northwest Phonetics and Phonology Conference 2016 (Eugene, OR).

Helms, A.J., May, M., Albrecht, J., Barrera, A., Boone, H., Davidson, D., Dodson, C., Gonzales, T., Holmgren, L., Johnson, Dane., Jordan, C., Kelley, M., McBride, G., Mullner, I., Nelson, L., Ruesch, K., Tolman, J., & White, D. (2015). *Kikongo Language Structures*. Presented at the 2015 Undergraduate Research and Scholarship Conference (Boise, ID).

Venues I have reviewed for in the last 5 years

- National Science Foundation
- International Congress of Phonetic Sciences
- ComputEL Workshop
- Speech Communication
- Language and Speech

- Frontiers in Psychology
- Trends in Hearing
- Chapman & Hall/CRC - Statistics
- Journal of Phonetics
- The Journal of the Acoustical Society of America
- Canadian Journal of Linguistics/Revue canadienne de linguistique

Honors and Awards

- Travel Bursary, International Phonetic Association, 2023
- Alberta Graduate Excellence Scholarship, University of Alberta. 2019
- University of Alberta Doctoral Recruitment Scholarship, University of Alberta. 2017
- World Languages Scholarship, Boise State University. 2014
- Boise State University All University Scholarship, Boise State University. 2013
- Boise State Bookstore Fund Award, Boise State University. 2012
- Idaho Robert R. Lee Promise B Scholarship, Boise State University. 2011
- Boise State Presidential Scholarship, Boise State University. 2011

Research and Work Experience

University of Alberta (Edmonton, AB)

Research assistant

- Alberta Phonetics Lab, Department of Linguistics: fall 2015 through winter 2017, spring through summer 2019, winter 2020 through summer 2020, spring 2021
- Linguistics Abstracts Online: fall 2017, winter 2018
- Deep Learning for Sound Recognition Group: spring through summer 2017

Graduate assistant

Department of Communication Sciences and Disorders
Spring 2016

Remote

Google Summer of Code participant

NumFOCUS
Summer 2018

Boise State University (Boise, ID)

Research intern

Mary Ellen Ryder Linguistics Lab, Department of English
Spring 2015

Teaching Experience

George Mason University (Fairfax, VA)

- Phonetics
- Formal phonology
- Lab phonology

University of Washington (Seattle, WA)

Department of Linguistics

- Intro to Linguistic Phonetics (LING 450/550): winter 2022, autumn 2022
- Computational Methods for Linguists (LING 471): spring 2022
- Directed undergraduate research on automatic speech recognition: autumn 2022

University of Alberta (Edmonton, AB)

Assistant lecturer

Department of Linguistics

- Phonetics (Ling 205): fall 2021

Principal instructor

Department of Linguistics

- Intro to Linguistics (Ling 101): summer 2021
- Phonetics (Ling 205): fall 2020

Teaching assistant

Department of Linguistics

- Linguistics in Action (Ling 102): winter 2021
- Intro to Linguistics (Ling 101): winter 2019, winter 2021
- Phonetics (Ling 205): fall 2018 through winter 2019, fall 2019
- Phonology (Ling 310): fall 2018

Python reading group discussion leader

Department of Linguistics

Summer 2018

Boise State University (Boise, ID)

Digication Teaching Intern

Boise State University Department of World Languages, Spanish section

Spring 2014

Academic Mentor

TRIO Upward Bound Summer Program

Summer 2013, summer 2014, summer 2015

Service

2020 to 2021 academic year

- Department of Linguistics Councillor for the Graduate Students' Association
- Co-organizer of the Developing a Cross-Platform Federated Code Repository for Speech Research special session at The 179th Meeting of the Acoustical Society of America
- Co-developer of the Speech and Language Resource Bank (SLRB)

2019 to 2020 academic year

- President of the Linguistics Graduate Student Association
- Website coordinator for the Acoustics Week in Canada 2019 conference
- Co-organizer of the Developing a Cross-Platform Federated Code Repository for Speech Research special session at The 179th Meeting of the Acoustical Society of America

2018 to 2019 academic year

- President of the Linguistics Graduate Student Association
- Volunteer at the 11th International Conference on the Mental Lexicon
- Volunteer at the University of Alberta Department of Linguistics 50th anniversary celebration
- Website coordinator for the Acoustics Week in Canada 2019 conference

2017 to 2018 academic year

- Vice President of the Linguistics Graduate Student Association

2015 to 2016 academic year

- MSc student representative to the departmental council meeting

Current professional society memberships

- The Acoustical Society of America (full member)

Professional Development

edX

- LAFF – On Programming for Correctness. University of Texas at Austin (2020). (Verified certificate earned)
- Advanced Linear Algebra: Foundations to Frontiers. University of Texas at Austin (2020). (Verified certificate earned)
- Linear Algebra - Foundations to Frontiers. University of Texas at Austin (2019). (Verified certificate earned)

Developed Software

- Phonetics.jl: <https://github.com/maetshju/Phonetics.jl>
- LexicalCharacteristics.jl: <https://gitlab.com/maetshju/LexicalCharacteristics.jl>
- PraatDocExtractor: <https://gitlab.com/maetshju/PraatDocExtractor>

Significant open-source software contributions

- CPU and GPU versions of the connectionist temporal classification algorithm for the Flux.jl machine learning package in Julia (ultimately merged into NNlib.jl). Accepted pull request viewable [here](#).

Language Skills and Experience

- English (Native)
- Spanish (Advanced)
- Portuguese (Intermediate)
- Esperanto (Intermediate)
- Kikongo (Some documentation)

Academic and Research Skills

Experimental and research techniques

- Lexical decision
- Laboratory speech recording
- Palatography/linguography
- Field elicitation and recording
- Corpus development and querying
- Forced alignment
- Statistical analysis and modeling
- Monte Carlo simulation

Technological skills

- General purpose programming (Julia, Python, Java, C, R, etc.)
- Scripting (Julia, Python, R, Praat, BASH, etc.)
- Website development (HTML, Django, Pelican, etc.)
- IDEs (Eclipse, RStudio, etc.)
- Basic graphic design (GNU Image Manipulation Program, Adobe Photoshop)
- Basic page layout and publication formatting (Scribus, Adobe InDesign)