

Dr. Christopher Carignan

Speech Scientist, Data Analyst

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SUMMARY

Using R and Matlab, I leverage traditional statistical techniques as well as state-of-the-art machine learning methods to characterize and detect speech events, create computational models of how multimodal vocal tract actions relate to the acoustic signal, and innovate computational and statistical methods to process and analyze large speech data sets.

WORK EXPERIENCE

CURRENT, FROM NOV 2017 (FT)

Institute of Phonetics and Speech Processing
Scientific Staff

I am in charge of software development (Matlab) for analyzing real-time MRI videos of speech. This development includes image analysis, kinematic signal creation, and statistical analysis of the resulting data.

2015–2017 (FT)

MARCS Institute for Brain, Behaviour and Development
Level B Research Lecturer

I was engaged in both independent and collaborative speech production research; I was the coordinator of the Analysis of Human Articulatory Actions laboratory; and 20% of my work load was devoted to teaching, including lectures, tutorials, workshops, and student supervision.

2013–2015 (FT)

North Carolina State University
Postdoctoral Research Scholar – Linguistics Program

I developed experimental, computational, and statistical methods for analysis of ultrasound video of tongue shape and relating this shape to the acoustic signal. These methods were used to investigate differences in speech articulation among varieties of North American English.

2013 (PT)

The Executive Voice, LLC
Computational Consultant

I developed software for the delivery of metrics-driven assessment of speech recordings for the improvement of professional spoken English.

EDUCATION

- 2009–2013 **Doctor of Philosophy**
French (Linguistics)
University of Illinois at Urbana-Champaign
- 2006–2009 **Master of Arts**
French (Linguistics)
University of Illinois at Urbana-Champaign
- 2001–2005 **Bachelor of Arts**
MAGNA CUM LAUDE, HONORS IN LINGUISTICS
Double major: Linguistics, French
Western Washington University

SELECTED AWARDS

- 2016 **Achievement Award in Recognition of Exemplary Service**
The MARCS Institute for Brain, Behaviour and Development
- 2016 **Transdisciplinary and Innovation Grant**
Australian Research Council Centre of Excellence for the Dynamics of Language
- 2011–2013 **Graduate Research Improvement Grant**
National Science Foundation

PROFICIENCIES & SKILLS

PROGRAMMING	R, Matlab, Praat, Python, Java, Julia, SQL
SPOKEN LANGUAGES	English (native), French (fluent)
OPERATING SYSTEMS	UNIX/Linux, Windows

SELECTED ORAL PRESENTATIONS

- “Quantifying the vocal tract: A primer to articulatory data analysis in R”, *Laboratoire Parole et Langage (LPL), Aix Marseille Université, Aix-en-Provence, France, 2018.*
- “Using functional linear mixed models and generalized additive mixed models to identify spatial regions of vocal tract variation”, *LabPhon16 satellite event: “New Developments in Speech Sensing and Imaging”*, Lisbon, Portugal, 2018.
- “Multivariate analysis of articulatory-acoustic relationship in Southern American English vowels”, *Australian Linguistic Society Annual Meeting*, Parramatta, Australia, 2015.

SELECTED PUBLICATIONS

- Carignan, C., 2019. “A network-modeling approach to investigating individual differences in articulatory-to-acoustic relationship strategies.” *Speech Communication*, 109, 1–14.
- Carignan, C., 2018. “Using ultrasound and nasalance to separate oral and nasal contributions to formant frequencies of nasalized vowels.” *Journal of the Acoustical Society of America*, 143(5), 2588–2601.
- 2018 **doi:10.5334/labphon.136**
- 2018 doi:10.1121/1.5066350
- 2017 **doi:10.1016/j.wocn.2017.04.005**
- 2017 doi:10.1098/rsos.170306
- 2017 doi:10.1121/1.4991348
- 2015 **doi:10.1016/j.wocn.2015.01.001**
- First or single author publications in **bold**
324 citations, Hirsch index: **10**, i10 index: **10**