

## **Jeffrey J. Berry**

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Research Scientist

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## **Objectives**

I am looking for opportunities to develop and implement creative solutions to challenging problems using my training and experience with machine learning and data analysis. Although my background is primarily in speech processing, I am also interested in new domains and applications. I enjoy working as part of a team. I am a US citizen.

## **Skills**

Machine learning, deep neural networks, automatic speech recognition, natural language processing, signal processing, scientific research, data analysis, parallel computing, linguistics

**Software:** Python, Matlab, R, C/C++, Java, Linux/Unix, Bash, CMU Sphinx, Hidden Markov Model Tool Kit (HTK), Festival Speech Synthesis System, Robot Operating System (ROS), LaTeX, Git, Hadoop, Hbase, CUDA

## **Education**

Ph.D. Linguistics, University of Arizona, 2012

M.S. Human Language Technology, University of Arizona, 2008

B.A. Linguistics, University of Utah, 2006, Magna cum Laude

B.A. Middle East Studies – Hebrew, University of Utah, 2006, Magna cum Laude

## **Experience**

July 2013 – Present: Research Scientist at InsideSales.com

I am building a suite of voice analysis tools that are designed to help sales representatives and managers more effectively communicate with their customers and clients. The tools include speech-to-text, sentiment analysis, automatic call evaluation, keyword spotting, emotion detection, and others.

April 2012 – June 2013: Post Doc at the Italian Institute of Technology

I conducted scientific research on human speech production and perception, and how to apply insights from that research to improving speech recognition systems. I was responsible for designing, collecting, and processing a large speech corpus that included ultrasound tongue imaging, electromagnetic articulography, and Kinect data in addition to the audio and video.

August 2006 – May 2012: Graduate Student at the University of Arizona

My research was focused primarily on applying machine learning techniques to speech production data, especially ultrasound tongue imaging. I built a toolset for annotating and

analyzing ultrasound tongue images, which included facilities for training a deep neural network for automatically finding the tongue surface in the ultrasound images.

November 2010 – May 2011: Research Fellow at the Italian Institute of Technology

I was involved in scientific experiments on the role of speech production experience on speech perception. I was also responsible for analyzing a prototype multi-modal speech corpus that included ultrasound tongue images.

June 2009 – August 2009: Intern at L-3 Communications

For this internship I collected a small speech corpus and implemented a prototype speech recognition system using HTK.

June 2008 – August 2008: Research Fellow at the Chinese Academy of Social Sciences

This was a collaboration funded by the National Science Foundation's East Asia and Pacific Summer Institute program. I was involved in designing and collecting a small speech corpus using electromagnetic articulography to study speech reduction.

## **Publications**

- D'Ausilio, A., Maffongelli, L., Bartoli, E., Campanella, M., Ferrari, E., Berry, J. and Fadiga, L. (2014). Listening to speech recruits specific tongue motor synergies as revealed by transcranial magnetic stimulation and tissue-Doppler ultrasound imaging. *Philosophical Transactions of the Royal Society B*, 365(1644). <http://dx.doi.org/10.1098/rstb.2013.0418>
- Bartoli, E., D'Ausilio, A., Berry, J., Badino, L., Bever, T., and Fadiga, L. (2013). Listener-speaker perceived distance predicts the degree of motor contribution to speech perception. *Cerebral Cortex*. <http://dx.doi.org/10.1093/cercor/bht257>
- Berry, J. Fadiga, L. (2013). Data-driven design of a sentence list for an articulatory speech corpus. *Interspeech 2013*, pp. 1287-1291.
- Berry, J., Fasel, I., Fadiga, L. & Archangeli, D. (2012). Training deep nets with imbalanced and unlabeled data. *Interspeech 2012*.
- Berry, J. (2012). Machine learning methods for articulatory data. Ph.D. dissertation, University of Arizona.
- Berry, J., Ji, S., Fasel, I., & Archangeli, D. (2011). Articulatory reduction in Mandarin Chinese words. *Interspeech 2011*, pp. 2809-2812.
- Berry, J., & Fasel, I. (2011). Dynamics of tongue gestures extracted automatically from ultrasound. *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 557-560.
- Archangeli, D., Berry, J., Ji, S., Josephs, K., Hunt, N., Fisher, M., & Carnie, A. (2011). ATR in Scottish Gaelic tense sonorants. In A. Carnie (ed.) *Formal Approaches to Celtic Linguistics*, pp. 283-306. Cambridge University Press.
- Fasel, I., & Berry, J. (2010). Deep belief networks for real-time extraction of tongue contours from ultrasound during speech. *20th International Conference on Pattern Recognition (ICPR)*, pp. 1493-1496.