

JOSH MEYER

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jrmeier.github.io



I'm a PhD candidate passionate about Machine Learning and open-source language technologies. My educational background is in Computational Linguistics, Theoretical Linguistics, Natural Language Processing, Statistics, and Cognitive Science. My PhD thesis focuses on Speech Technology, and Automatic Speech Recognition in particular. I work to develop approaches for training more robust Deep Neural Networks for Speech Recognition, using Multi-Task Learning and Transfer Learning. My research is linguistically informed, but based in machine learning methods.

Currently based in San Francisco.

EDUCATION

University of Arizona

Ph.D. in Linguistics (focus: *computational linguistics*)

Expected 2019

Tucson, AZ

University of Arizona

M.A. in Linguistics

May 2015

Tucson, AZ

Seton Hall University

B.A. in Liberal Studies

May 2012

South Orange, NJ

INDUSTRY EXPERIENCE

Mozilla (Machine Learning Research Group)

NSF-Sponsored Internship

October 2018 — Present

Developing end-to-end multilingual Automatic Speech Recognition techniques based on Transfer Learning and Deep Neural Networks (i.e. DeepSpeech).

Various Companies

Kaldi & ASR Consultant

2016 — 2018

Optimized Automatic Speech Recognition pipelines for various companies using the Kaldi toolkit.

TECHNICAL STRENGTHS

Computer Languages

Python, Bash, MATLAB, Perl, R, C++ (*some knowledge*)

Other

TensorFlow, Kaldi, Linux, Amazon Web Services, git & GitHub

OPEN SOURCE WORK

Mozilla DeepSpeech	<i>Added Transfer Learning branch</i>	[Code]
NVDA	<i>Added Kyrgyz language to screen reader</i>	[Code]
eSpeak NG	<i>Added Kyrgyz language to speech synthesizer</i>	[Code]
Autotrace	<i>Created tools for tongue contour vizualization</i>	[Code]

RESEARCH EXPERIENCE

National Science Foundation <i>Graduate Research Fellow</i>	July 2015 — Present
Conducting PhD thesis research on Multi-Task Learning and Deep Learning techniques for Automatic Speech Recognition in low-resource data scenarios	
CNRS-LIMSI <i>Chateaubriand Research Fellow</i>	July 2016 — July 2017 <i>Orsay, France</i>
DNN acoustic model adaptation and RNN text augmentation techniques	
American University of Central Asia <i>Visiting Research Scholar</i>	June 2015 — August 2015 <i>Bishkek, Kyrgyzstan</i>
Created a spoken corpus of the Kyrgyz language	
Arizona Phonological Imaging Lab <i>Research Assistant</i>	Spring 2015 <i>Tucson, AZ</i>
Developed software to process ultrasonic images	
American University of Central Asia <i>Visiting Research Fellow</i>	August 2013 — March 2014 <i>Bishkek, Kyrgyzstan</i>
Conducted acoustic-phonetic and phonological research	
Language Acquisition Research Center at Hunter CUNY <i>Research Assistant</i>	November 2011 — August 2012 <i>New York, NY</i>
Transcribed spontaneous speech; Aided in website construction	
KIT/NYU MEG Lab at NYU <i>Research Assistant</i>	May 2012 — August 2012 <i>New York, NY</i>
Aided in data analysis and processing	
Language Acquisition and Neurolinguistics Lab at Rutgers <i>Research Assistant</i>	May 2012 - August 2012 <i>New Brunswick, NJ</i>
Aided in experiment design	

GRANTS & AWARDS

NSF INTERN Grant <i>Approx. \$50,000</i>	2018 <i>National Science Foundation</i>
Chateaubriand STEM Fellowship €5,000	2016 <i>French Embassy to the United States of America</i>
GROW Travel Award \$5,000	2016 <i>National Science Foundation</i>
Graduate Research Fellowship <i>Approx. \$102,000 + \$36,000 (tuition)</i>	2015-2018 <i>National Science Foundation</i>
Visiting Research Fellowship \$5,000	August 2013 — March 2014 <i>Central Asian Studies Institute, American University of Central Asia</i>
Regents Scholarship \$111,140 (<i>tuition</i>)	August 2008 — May 2012 <i>Seton Hall University</i>

PUBLICATIONS

- (2018) Meyer, Joshua. **Unsupervised Task Discovery for Multi-Task Acoustic Modeling.** Proceedings of the Machine Learning in Speech and Language Processing Workshop. [Poster] [Paper]
- (2018) Meyer, Joshua, and Kloehn, Nick, and Carnie, Andrew. **The Field is not the Lab, and the Lab is not the Field: Experimental linguistics and endangered language communities.** *Insights from Practices in Community-Based Research: From Theory To Practice Around The Globe*, ISBN: 978-3-11-052701-8 Edited by Shannon Bischoff and Carmen Jany. *Mouton De Gruyter*
- (2018) Bekmurzaev, Nurbek, and Lottholz, Philipp, and Meyer, Joshua. **Navigating the safety implications of doing research and being researched in Kyrgyzstan: cooperation, networks and framing.** *Central Asian Survey*, 37:1, 100-118, DOI: 10.1080/02634937.2017.1419165
- (2017) Meyer, Joshua. **Development of a Kyrgyz Speech Synthesizer: A Demonstration of the Ossian Frontend and Merlin Neural Network Speech Synthesis Toolkit.** *Proceedings of The 5th International Conference on Computer Processing of Turkic Languages*, Vol. 1, 130-136.
- (2016) Lottholz, Philipp, and Meyer, Joshua. **Friend or Foreign Agent? On the Limits of Field Research in Post-Soviet Kyrgyzstan.** *Exeter Central Asian Studies Network*.
- (2016) Meyer, Joshua. **Conducting Linguistic Fieldwork in Kyrgyzstan.** *Arizona Anthropologist*, Vol. 27.

PRESENTATIONS

Language Technologies in Central Asia: A Survey. Joint ESCAS-CESS Conference at the American University of Central Asia. *2017, Bishkek*

Predicting Language Dominance in Kyrgyz-Russian Bilinguals. w/ Quam, Carolyn Arizona Linguistics Circle 9. *2015, Tucson*

Phonological processing in Kyrgyz-Russian bilinguals. w/ Quam, Carolyn, and Bever, Thomas The Miniconference on Metrical Structure: Acquisition and processing. *2014, Utrecht*

The Kyrgyzstan corpus project: Building a language resource unique to Kyrgyzstan and available to all. CASI Public Seminar at the American University of Central Asia. *2014, Bishkek*

Now you hear it, now you dont: Phonological processing in Kyrgyz-Russian bilinguals. CASI Public Seminar at the American University of Central Asia. *2013, Bishkek*

Psycholinguistics: Thinking about language differently. Lecture conducted at The Plattform at Werkstatttraum. *2013, Berlin*

EVENT ORGANIZAION

Kyrgyz Voice Technology Hackathon w/ Anguelina Popova, Fran Tyers [LINK] Attended by undergraduate students as well as professional developers *2019, American University of Central Asia (Bishkek)*

DeepSpeech & Common Voice Tutorial w/ Fran Tyers Fifth International Workshop on Computational Linguistics for Uralic Languages *2019, University of Tartu (Tartu)*

Speech Synthesis Workshop: Hands-on with Merlin & Ossian w/ Fran Tyers [LINK] Delivered to Faculty and Graduate Students in the Computational Linguistics Department *2018, Higher School of Economics (Moscow)*

Speech Recognition Workshop: Hands-on with Kaldi & DeepSpeech w/ Fran Tyers [LINK] Delivered to Faculty and Graduate Students in the Computational Linguistics Department *2017, Higher School of Economics (Moscow)*

WRITTEN TUTORIALS

How to Train *practically* any Model from *practically* any Data with TensorFlow [LINK]

Getting started with the Merlin Speech Synthesis Toolkit [LINK]

How to Train a Deep Neural Net Acoustic Model with Kaldi [LINK]

How to add a new language to the eSpeak NG Speech Synthesizer [LINK]

The Flow of TensorFlow: An Email Classification Tutorial [LINK]

An Introduction to CMU-Sphinx Speech Recognition Toolkit: First Steps [LINK]