

# Iroro Orife

AUDIO DSP, SPEECH · RESEARCH ENGINEER

☎ (+1) 206-693-9979 | ✉ [iorife@icloud.com](mailto:iorife@icloud.com) | 📱 [ruohoruotsi](#) | 🌐 [ruoho-ruotsi](#) | 📺 [iroroorife](#)

## Objective

An applied research & software development role in audio, speech and natural language technologies

## Skills

<b>Languages</b>	Python, C/C++, Objective-C, bash, LaTeX, Java, Scala, MATLAB
<b>DSP</b>	Fourier Analysis, IIR/FIR Filter Design, MIR features, segmentation, source separation, ARM NEON SIMD
<b>Speech</b>	Training & maintenance of custom LVCSR models in Kaldi (DNN-HMM, LF-MMI), with n-gram LMs
<b>Machine Learning</b>	DNN, RNN & seq2seq modeling in TF, Keras & PyTorch, clustering & classification, scikit-learn, PCA/ICA/NMF
<b>Audio</b>	Solid knowledge of audio engines, codecs, effects, mixing, psychoacoustics, audio production & post-production
<b>Audio Frameworks</b>	LibROSA, numpy, CoreAudio, AudioUnit, Stagefright, Audioflinger
<b>Infrastructure</b>	Horizontally scaling fleets of Kaldi decoders in AWS EC2: Load Balancers, Auto-Scaling & Target groups
<b>Intangibles</b>	I ship! Fast learner with strong engineering communication, team work ethic & emotional intelligence

## Experience

### Marchex

STAFF ENGINEER

Seattle, WA

Sept. 2014 - PRESENT

- Applied research (from prototype to production) in narrowband conversational speech recognition
- Develop Audio DSP algorithms for language & telephony SPAM identification
- Prepare ASR acoustic & language model corpora. Labeling tooling, scoring & data pipeline development
- Design selection algorithms to automatically build audio & text corpora from 80k hours of audio & billions of text utterances
- Train custom DNN-HMM models in Kaldi. Experiment with novel E2E architectures
- Perform 24/7 on-call support of fleet processing 1M calls/day. Extensive experience with AWS EC2 {LB, ASG, EFS, EBS}

### Dolby Laboratories

STAFF AUDIO APPLICATIONS ENGINEER

San Francisco, CA

Jan. 2012 - Aug. 2014

- Worked on embedded systems implementations/ports of Dolby's perceptual audio coding & audio post-processing
- Algorithms: MDCT, spectral extension, Hybrid complex QMF, dialog, bass & volume leveling, surround virtualization
- Extensive experience conducting acoustic measurements & critical listening
- Mentored junior engineers & regularly lectured on Dolby's audio-dsp algorithms to APAC FAE staff

### Apple

SENIOR AUDIO SOFTWARE ENGINEER

Cupertino, CA

Feb. 2006 - Nov. 2011

- **2006 - 2009:** Developed system level audio & effect processing features for Soundtrack Pro v2, Final Cut Studio 2 & 3
- Integrated, fixed bugs and maintained audio-unit hosting code for Logic Pro audio effects within ST Pro, Final Cut Pro X
- **2010-2011:** Developed & shipped an audio auto-synch tool & a multi-channel audio file configuration classifier for FCP X
- Collaborated with the CoreAudio team on optimizations to their resampler & audio analysis algorithms

### 2KSports

AUDIO SOFTWARE ENGINEER

San Rafael, CA

May 2005 - Jan. 2006

- Developed C/C++ tools & libraries for the XBOX360 launch of NBA2k6, NHL2k6, College Hoops 2K6
- Performed support tasks to game development teams using the audio library

## Education

### Dartmouth College

A.M. IN MUSIC COMPOSITION (ELECTRO-ACOUSTIC MUSIC)

Hanover, NH

Sept. 1999 - June 2001

- Interdisciplinary Masters in 20th century Composition, Music Cognition, Aesthetics, Acoustics & Signal Processing

### Carnegie Mellon University

B.SC. IN ELECTRICAL AND COMPUTER ENGINEERING, WITH A DOUBLE MAJOR IN MATHEMATICS/COMPUTER SCIENCE

Pittsburgh, PA

Sept. 1993 - May 1997

### École polytechnique fédérale de Lausanne (EPFL)

3RD YEAR EXCHANGE STUDENT IN COMPUTER AND COMMUNICATION SCIENCES

Lausanne, Switzerland

July 1995 - August 1996

## Publications

---

- 2018 **Attentive Sequence-to-Sequence Learning for Diacritic Restoration of Yorùbá Text**, INTERSPEECH 2018
- 2017 **Semi-Supervised Model Training for Unbounded Conversational Speech Recognition**, arXiv
- 2017 **Audio Spectrogram Factorization for Classification of Telephony Signals**, Marchex Technical Report
- 2009 **Introduction to Digital Signal Processing (review)**, Computer Music Journal
- 2001 **Riddim: A Rhythm Analysis Tool Based On Independent Subspace Analysis**, MA Thesis

## Patents Issued

---

- 2015 **US 9,485,354**, Identifying call features and associations to detect call traffic SPAM *Marchex*
- 2015 **US 8,929,561**, System and Method for Automated Audio Mix Equalization *Apple*
- 2014 **US 8,842,842**, Detection of audio channel configuration *Apple*
- 2013 **US 8,621,355**, Automatic synchronization of media clips *Apple*

## Extracurricular

---

### Institute of Electrical and Electronics Engineers (IEEE), Audio Engineering Society (AES)

MEMBER

2012 - PRESENT

### Niger-Volta Language Technologies Institute

FOUNDER OF OPEN-SOURCE WEST AFRICAN LANGUAGE PROJECT

2018 - PRESENT

### Unicode Common Locale Data Repository (CLDR) Project

YORÙBÁ LANGUAGE CONTRIBUTOR

2007 - 2008

### The Society for Electro-Acoustic Music in the United States (SEAMUS)

MANAGING EDITOR FOR JOURNAL SEAMUS

2008-2012

## Natural Languages

---

### French

FULL PROFESSIONAL PROFICIENCY, WRITTEN & SPOKEN

- University of Lausanne coursework in Literature & Film
- ILR proficiency of 4+

### Yorùbá

CONVERSATIONAL PROFICIENCY

- Junior secondary school reading/writing level

### Spanish

BASIC PROFICIENCY

- Fulfill traveling needs & conduct myself in a polite manner