

# 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 or natural language processing

## Skills

<b>Languages</b>	Python, C/C++, Objective-C, Java, bash, LaTeX, Scala, MATLAB
<b>DSP</b>	Fourier Analysis, IIR/FIR Filter Design, segmentation, MIR features, source separation, ARM NEON SIMD
<b>Speech</b>	Training LVCSR models in Kaldi (DNN-HMM, LF-MMI), n-gram LMs, building labeling & model scoring tools
<b>Machine Learning</b>	DNN, RNN & seq2seq modeling in Tensorflow, Keras & PyTorch, clustering & classification, PCA/ICA/NMF
<b>Audio</b>	Solid knowledge of audio codecs, effects, mixing, psychoacoustics, audio production & post-production
<b>Audio Frameworks</b>	LibROSA, 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
- Audio DSP algorithm development for language & Telephony SPAM identification
- Acoustic & Language model corpus preparation. Labeling tooling, scoring & data pipeline development
- Training of custom DNN-HMM models in Kaldi, Experiments with E2E ASR
- AWS EC2 {LB, ASG, EFS, EBS}. 24/7 on-call support of fleet processing 1M calls/day

### 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 included: Hybrid complex QMF, MDCT, spectral extension, Adaptive hybrid transform (AHT)
- Dialogue clarity, surround virtualization, volume leveling & bass enhancement
- 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 tools for Soundtrack Pro v2, Final Cut Studio 2 & 3.
- Integrated & maintained Logic Pro audio effects within the STP Audio-Unit hosting environment.
- Collaborated with core-audio team on optimizations to their resampler and audio analysis algorithms
- **2010-2011:** Developed & shipped an auto-synch feature for ingested media & an audio file configuration classifier for Final Cut X
- Integrated & maintained custom 64-Bit versions of Logic Pro audio effects within the FCP X Audio-Unit hosting environment

### 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 Music Composition, Cognition, Aesthetics, Audio Engineering & Music DSP

### 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

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- 2018 **Attentive Sequence-to-Sequence Learning for Diacritic Restoration of Yorùbá Text**, INTERSPEECH
- 2018 **Audio Spectrogram Factorization for Classification of Telephony Signals**, arXiv
- 2017 **Semi-Supervised Model Training for Unbounded Conversational Speech Recognition**, arXiv
- 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

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- 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

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

MEMBER

Jan 2012 - PRESENT

### Niger-Volta Language Technologies Institute

FOUNDER OF OPEN-SOURCE WEST AFRICAN LANGUAGE TECHNOLOGY 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 OF JOURNAL SEAMUS

2008 - 2012

## Natural Languages

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### 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