

# Iroro Orife

AUDIO DSP, SPEECH · RESEARCH ENGINEER

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## Objective

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

## Skills

<b>Languages</b>	Python, C/C++, Java, Objective-C, Scala, bash, LaTeX, MATLAB
<b>DSP</b>	Fourier Analysis, IIR/FIR Filter Design, MIR features, segmentation, audio source separation, ARM NEON SIMD
<b>Speech</b>	Training & maintenance of spoken language-id & 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>	Extensive knowledge of audio engines, codecs, psychoacoustics, effects, mixing, film-audio production & post
<b>Audio Frameworks</b>	PyTorch, TorchAudio, librosa, numpy, ffmpeg, CoreAudio, AudioUnit, Stagefright, Audioflinger
<b>Infrastructure</b>	Horizontally scaling Kaldi decoders in AWS EC2. Apache {Kafka, Spark}, Spinnaker, Huggingface. Misc ML Ops.
<b>Intangibles</b>	I ship! Fast learner with strong engineering communication, team work ethic & emotional intelligence

## Experience

### Netflix

Seattle, WA

SENIOR SOFTWARE ENGINEER - AUDIO ALGORITHMS

Nov. 2018 - Present

- Algorithm design for audio content analysis & understanding. Research, prototyping & product-ization
- Training & maintaining Audio ML models for scaled Post-production & Globalization tasks
- Construction of large-scale audio-video training datasets

### Marchex

Seattle, WA

STAFF ENGINEER

Sept. 2014 - Nov. 2018

- Algorithm design, prototyping, implementation, performance analysis & optimization
- Develop audio-dsp algorithms for language & telephony SPAM identification
- Construct corpora for conversational speech recognition. Design automatic data selection algorithms
- Train, deploy & maintain custom DNN-HMM models in Kaldi. Experiment with novel end-to-end ASR architectures
- Perform 24/7 on-call support of fleet processing 1M calls/day. Extensive experience with AWS EC2 {LB, ASG, EFS, EBS}

### Dolby Laboratories

San Francisco, CA

STAFF AUDIO APPLICATIONS ENGINEER

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

Cupertino, CA

SENIOR AUDIO SOFTWARE ENGINEER

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

San Rafael, CA

AUDIO SOFTWARE ENGINEER

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

Hanover, NH

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

Sept. 1999 - June 2001

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

## Selected Recent Publications

- 2024 **DJ Tool Retrieval Using Speech Activity, Music Structure And CLAP Embeddings**, ISMIR LBD 2024
- 2024 **Leveraging counterfactual cross-modal pairs for audiovisual representation learning**, CVPR 2024
- 2024 **Ìròyìnspeech: A multi-purpose yorùbá speech corpus**, LREC-COLING 2024
- 2023 **A generalized bandsplit neural network for cinematic audio source separation**, IEEE OJSP-ICASSP 2023
- 2022 **BibleTTS: a large, high-fidelity, multilingual, and uniquely African speech corpus**, Interspeech 2022
- 2022 **A large TV dataset for speech and music activity detection**, EURASIP-JASMP 2022
- 2020 **Masakhane – Machine Translation For Africa**, AfricanNLP Workshop (ICLR 2020)
- 2018 **Attentive Seq2Seq Learning for Diacritic Restoration of Yorùbá Text**, Interspeech 2018
- 2018 **The Marchex 2018 English Conversational Telephone Speech Recognition System**, arXiv
- 2017 **Semi-Supervised Model Training for Unbounded Conversational Speech Recognition**, arXiv

## Patents

- 2023 **US 18/505,081**, Methods and systems for learning language-invariant audiovisual representations *Netflix*
- 2020 **US 10,810,995 B2**, Automatic speech recognition (ASR) model training *Marchex*
- 2019 **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), International Speech and Communication Association (ISCA)**

MEMBER

2012 - PRESENT

### **Niger-Volta Language Technologies Institute**

FOUNDER OF OPEN-SOURCE, WEST AFRICAN, LANGUAGE TECHNOLOGY ORGANIZATION

2018 - PRESENT

### **DC Productions (Independent record label)**

OWNER, SONGWRITER, RECORDING ARTIST, PRODUCER, REMIXER, A&amp;R, STAFF WRITER

2003-2012

## Natural Languages

### **French**

FULL PROFESSIONAL PROFICIENCY, WRITTEN &amp; 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