

# Elliot Saba

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## ACADEMIA

- **University of Washington, B.S. (2011) M.S. (2014) Ph.D. (2018) Electrical Engineering**, Focus on **Digital Signal Processing, Machine Learning, Real-Time Systems**
- **Ph.D. Dissertation:** “Techniques for Cough Sound Analysis,” a deep learning system to detect cough sounds and classify tuberculosis using low-power embedded hardware.
- **M.S. Thesis:** “A Fresh Look at Functional Connectivity,” a set of signal processing tools to aid in neuroimaging analysis for understanding long-range communication within the brain.
- **Pending Publication:** “Sparse Separable Convolutional Networks,” a new optimization for neural networks exploiting sparsity in large-scale computer vision models.

## SKILLS

- Proficient in **C/C++, Python, Julia, MATLAB, C#, Javascript**
- Experience with Assembly, Perl, PHP, Objective-C, CUDA/OpenCL
- Areas of expertise: **DSP, machine learning, parallelization, wireless communications, optimization for real-time systems, web service development.**

## EXPERIENCE

### TEACHING

**PMP EE 596 Predoctoral Lecturer**, University of Washington, 2013/2014/2015

- Created and taught a new Professional Masters Program class focusing on real-time sensing and control applications on smartphones

### RESEARCH

**Graduate Research Assistant**, UW Department of Computer Science, Ubiquitous Computing Laboratory, March 2014-Present

- Author signal processing and extraction algorithms used in a variety of situations, including estimation of natural physical processes, wireless communications, and signal synthesis.
- Built a Wi-Fi (802.11b/g) decoder for software defined radio
- Coauthor of *WiBreathe*<sup>[1]</sup>, a noncontact wireless system to determine breathing rate
- Coauthor of *SpiroCall*<sup>[2]</sup>, using old telephone infrastructure for lung function measurement

### EMPLOYMENT

**Research Intern**, Microsoft Research, Summer 2015, Summer 2017

- Prototyped new data collection methods for a wearable health sensing device
- Developed a framework to apply approximating optimizations to deep neural networks

**Research Intern**, Oculus Research, Summer 2016

- Built a prototype pulsed sonar system for real-time object tracking and scene understanding

### OPENSOURCE ACTIVITIES

**Julia Developer**, 2013-Present

- Core Julia<sup>[3]</sup> developer, responsible for, among other things, much of the infrastructure, binary dependency building, and quality-of-life maintenance of the language.

[1] WiBreathe: <https://goo.gl/rj9iJ6>

[2] SpiroCall: <https://goo.gl/h11ZAd>

[3] The Julia Language: <https://julialang.org>