# SaraAdkins


## contact
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## web & git
saraadkins.com
github.com/Satrat


## programming
♥ C, C++,
Python, SML,
Assembly, Java,
Objective-C

## frameworks
Tensorflow, Pandas,
SkLearn, CUDA,
OpenMPI, OpenCV

## software
Max MSP, PureData,
MATLAB, ProTools,
Logic Pro X, Unity

## hardware
Raspberry Pi, ESP32,
Arduino, Microsoft
HoloLens & Kinect,
Leap Motion

## music
classical & folk guitar,
viola, algorithmic
composition,
sound design, audio
engineering

## honors & awards
Senior Leadership
Recognition Award,
Armero Memorial
Award for BCSA,
Google igniteCS Grant,
Holleran Scholar,
Deans List S16-S18

## organizations
Phi Kappa Phi,
Sigma Alpa Iota,
Boston Classical
Guitar Society

## work experience

2019–Now **Machine Learning Engineer, Bose Health** Boston, MA
Work with research and production teams to integrate machine learning algorithms into prototypes and optimize them for production applications.
Optimized a deep learning model for speech enhancement to run on an embedded device with a neural accelerator unit.
Developed an algorithm to generate adaptive audio for breath entrainment.

2018-2019 **Software & DSP Engineer, Bose Consumer Electronics** Boston, MA
Designed signal chain for adjustable EQ feature released on NC700 headphones.
Developed an on-body detection algorithm using a fusion of sensors that achieved over 97% accuracy in user research studies. Implemented the algorithm in firmware.

2017–2018 **Teaching Assistant, Carnegie Mellon School of Computer Science** Pittsburgh, MA
*Intro to Computer Music, Computer Music Systems*
Led office hours teaching class topics including filter design, real time scheduling, sound synthesis and algorithmic composition. Graded homework and exams.
Provided feedback on student's electronic compositions and technical projects.

2017 **Software Engineering Intern, Bose Automotive Systems** Boston, MA
Developed low latency Windows audio I/O and control drivers used to interface with DSP Simulink models and simulate multi-channel automotive amplifier products.

## education

2014–2018 **Carnegie Mellon University** Pittsburgh, PA
Bachelors of Computer Science & Arts in Computer Science & Music Technology
University Honors, Intercollege Honors, Sound Design Minor. *GPA: 3.62/4.0*

## selected projects

2017-2019 **Creating with the Machine: Algorithmic Composition for Live Performance**
Designed and developed three interactive generative music systems that were premiered in concert by the CMU School of Music. Compositions created using Tensorflow, OSC, and Max MSP. Armero Memorial Award Winner at the 2018 undergraduate research symposium.

2017 **Raytracing Sound in 3D Space for Augmented Reality**
Hololens app that creates ambisonic reverb simulations influenced by room layout and user location. Simulations created using a data parallel ray tracing algorithm. Able to process 10 audio sources on the Hololens CPU with low latency.

2014-2018 **RobOrchestra**
Led a 10 student research group exploring creative possibilities for robotic instruments. Built instruments able to interpret MIDI and algorithmically generate music.

## patents & publications

2020 **"Non-linear breath entrainment"**
Inventor on patent US20200215383A1 filed by Bose Corporation

2019 **Hackaday Superconference Presenter**
Gave a 30 minute talk on designing intuitive generative music systems for live performances. Recording: https://www.youtube.com/watch?v=-uvXe02qxQM

2017 **"Perceiving texture gradients on an electrostatic friction display"**
Co-author on paper published in 2017 IEEE World Haptics Conference. Presents experiment results on viability of using haptics to aid non-visual navigation on tablets.