

# Sara Adkins

Computer Science & Music Technology

## contact

443.824.1238  
sadkins@cmu.edu

## web & git

saradkins.xyz  
github.com/satrat

## interests

Artificial intelligence  
Parallel systems  
Experimental music  
Digital instruments  
Machine learning  
Signal processing  
Algorithmic composition

## programming

C, C++, Python, Java,  
C#, SML, Perl, CUDA,  
OpenMPI, OpenCV

## software

Visual Studio,  
MATLAB, Unity,  
Crucible, Max MSP,  
Pro Tools, Logic Pro X

## hardware

Microsoft HoloLens,  
Microsoft Kinect, Leap  
Motion, Arduino,  
Raspberry Pi

## honors

Google igniteCS grant  
CMU Holleran Scholar  
Deans List S16-S17

## organizations

Sigma Alpha Iota  
Project Ignite  
CMU Robotics Club

## education

2014-2018 **Carnegie Mellon University** Pittsburgh, PA  
*Bachelor of Computer Science and Arts. GPA: 3.55*  
Computer Science and Music Technology majors, Sound Design minor

## work experience

2017 **Bose Automotive Systems Division** Software Engineering Intern  
Developed Windows real time audio I/O and control drivers used to interface with DSP Simulink models and simulate automotive amplifier products

2016 **Discovery Communications** Media Systems Engineering Intern  
Developed automated validation scripts for scanning incoming media tapes. Designed and executed renovations in UHD and VR editing suites

2015-2016 **Human Computer Interaction Institute** Research Assistant  
Investigated the use of haptic feedback in smartphone devices and developed a haptic keyboard application for Android. Research published in 2017 World Haptics Conference

## projects

2017 **Raytracing Sound in 3D Space for Microsoft HoloLens** C#, Unity, HoloLens  
HoloLens app that creates physically accurate audio filters based on a room mesh and user location. Filters created using a data parallel ray tracing algorithm able to process multiple audio sources on the CPU in real time

2017 **MovieLens Recommendation System** Matlab  
Recommender system that predicts a user's movie rating based on existing ratings in the MovieLens database. Matrix factorization model optimized with biasing and hidden features to achieve a RMSE of .877

2017 **Lets Go: the Go step sequencer** OpenCV, Python, Max  
An interactive soundscape composition that uses computer vision to detect patterns of game pieces on a Go board and transform them into music

2016 **Algorithmic Composition for Robotic Orchestra** Java, Arduino  
Robotic instrument system that uses music theory idioms, Markov Chains and probability density functions to generate polyphonic music in real time

## leadership

2015-2017 **RobOrchestra Project Leader** CMU Robotics Club  
Lead a 10 person robotics project and performance group that aims to explore and promote the creative possibilities of robotic instruments

2016-2017 **Vice President of Finance** Project Ignite  
Secured over \$7500 in grant funding and managed the budget for 10 STEM projects in a mentorship organization for high school students