

ARLooper: a Mobile AR Application for Collaborative Sound Recording and Performance

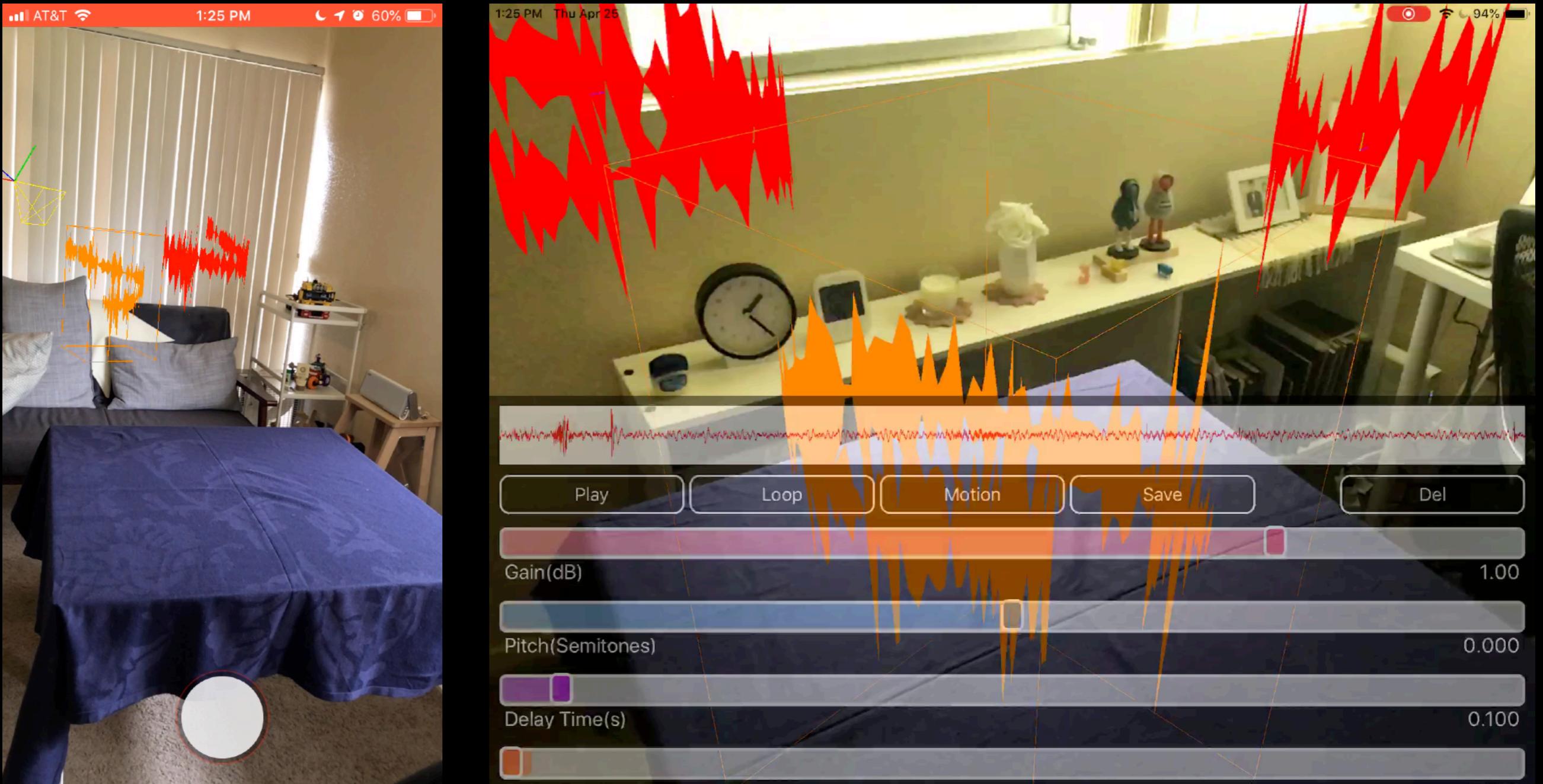
Sihwa Park

Media Arts and Technology
University of California, Santa Barbara

MAT 594X, Fall 2019



ARLooper (Old Version)



Background **Mobile Computing and NIME**

Mobile Devices for ...

Exploring new performance paradigms
with the emphasis of mobility and
collaborative aspects

Mobile Devices for ...

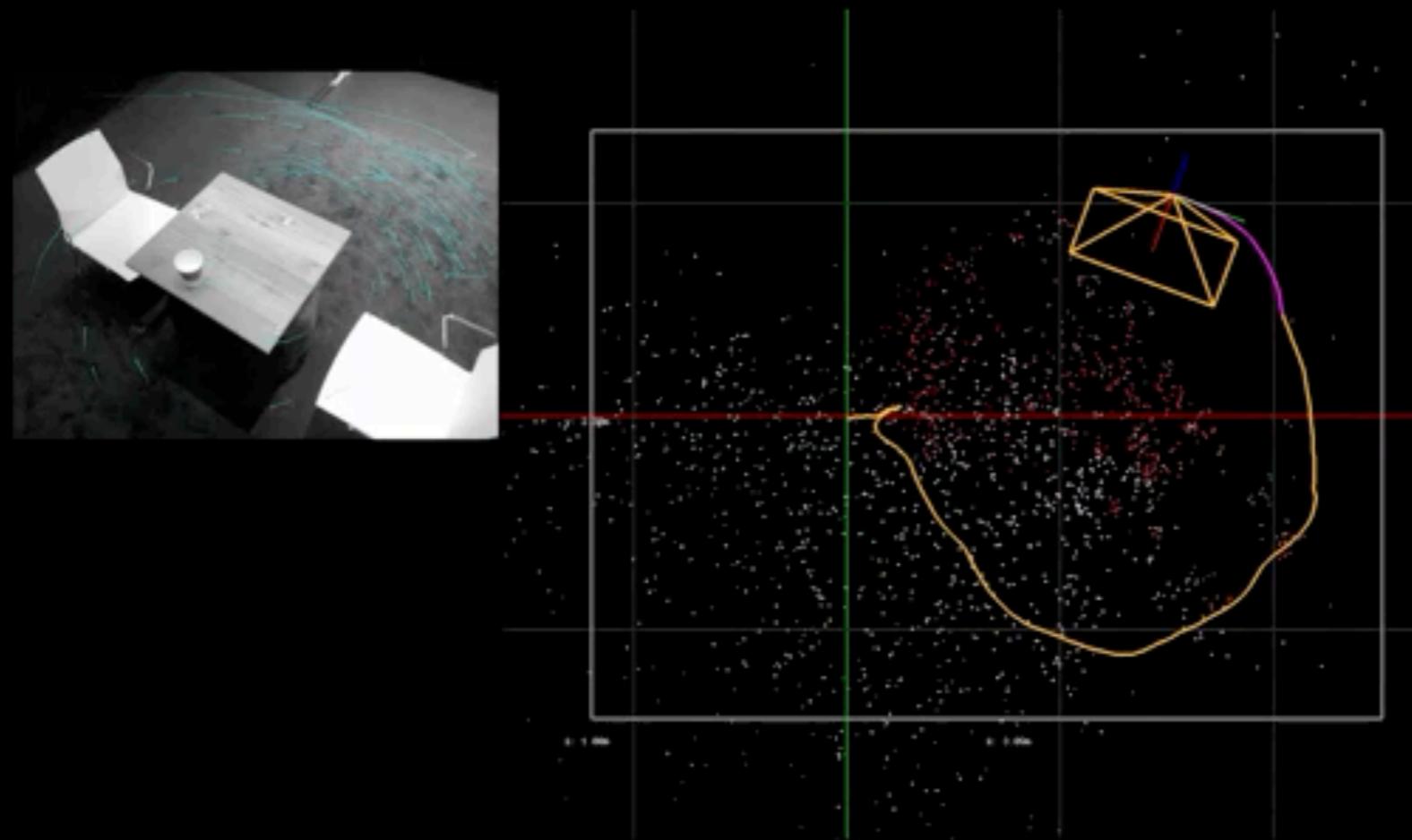
Creating new interfaces for musical expression and experience



Stanford CCRMA
Mobile Phone Orchestra (MoPho)

Advance in Mobile AR

Markerless AR



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Apple ARKit, WWDC 2018

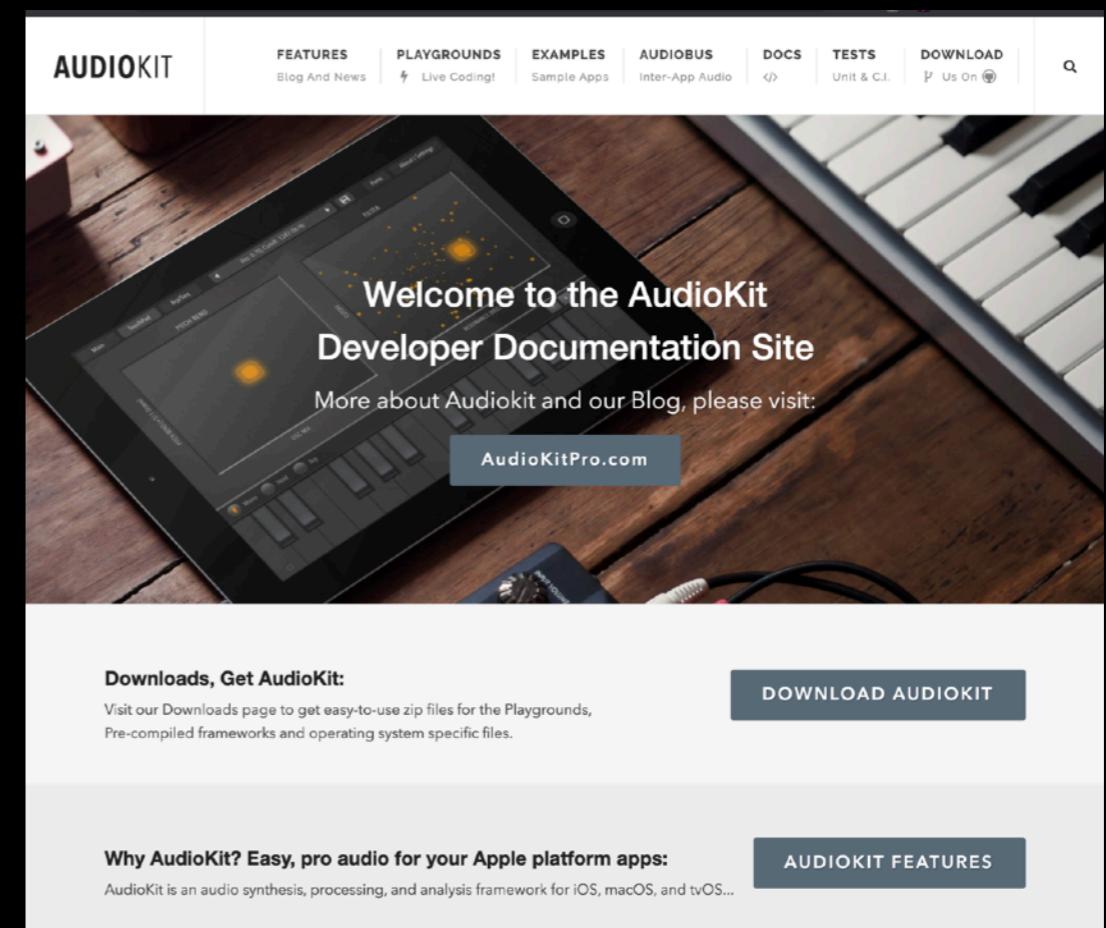
Tracking physical objects and environments without any prior information and 2D markers

Advance in Mobile AR

- A potential to
 - Devise a novel and collaborative AR interface
 - Create a unique musical experience
- ***ARLooper***, as an initial study and prototype,
 - AR-based mobile interface for multi-user sound recording and performance

Design

Development Frameworks



The screenshot shows the homepage of the AudioKit developer documentation site. At the top, there's a navigation bar with links for FEATURES (Blog And News, Live Coding!), PLAYGROUNDS (Sample Apps), EXAMPLES (Inter-App Audio), AUDIOBUS (Unit & C.I.), DOCS (Tests), TESTS (Unit & C.I.), DOWNLOAD (Us On), and a search icon. Below the navigation is a large image of a tablet displaying the AudioKit interface, which includes a keyboard and various audio processing controls. Overlaid on the tablet image is the text: "Welcome to the AudioKit Developer Documentation Site" and "More about Audiokit and our Blog, please visit: [AudioKitPro.com](#)". At the bottom left, there's a section titled "Downloads, Get AudioKit:" with a link to the Downloads page. To the right of this is a "DOWNLOAD AUDIOKIT" button. At the very bottom, there's a section titled "Why AudioKit? Easy, pro audio for your Apple platform apps:" with a brief description and a "AUDIOKIT FEATURES" button.

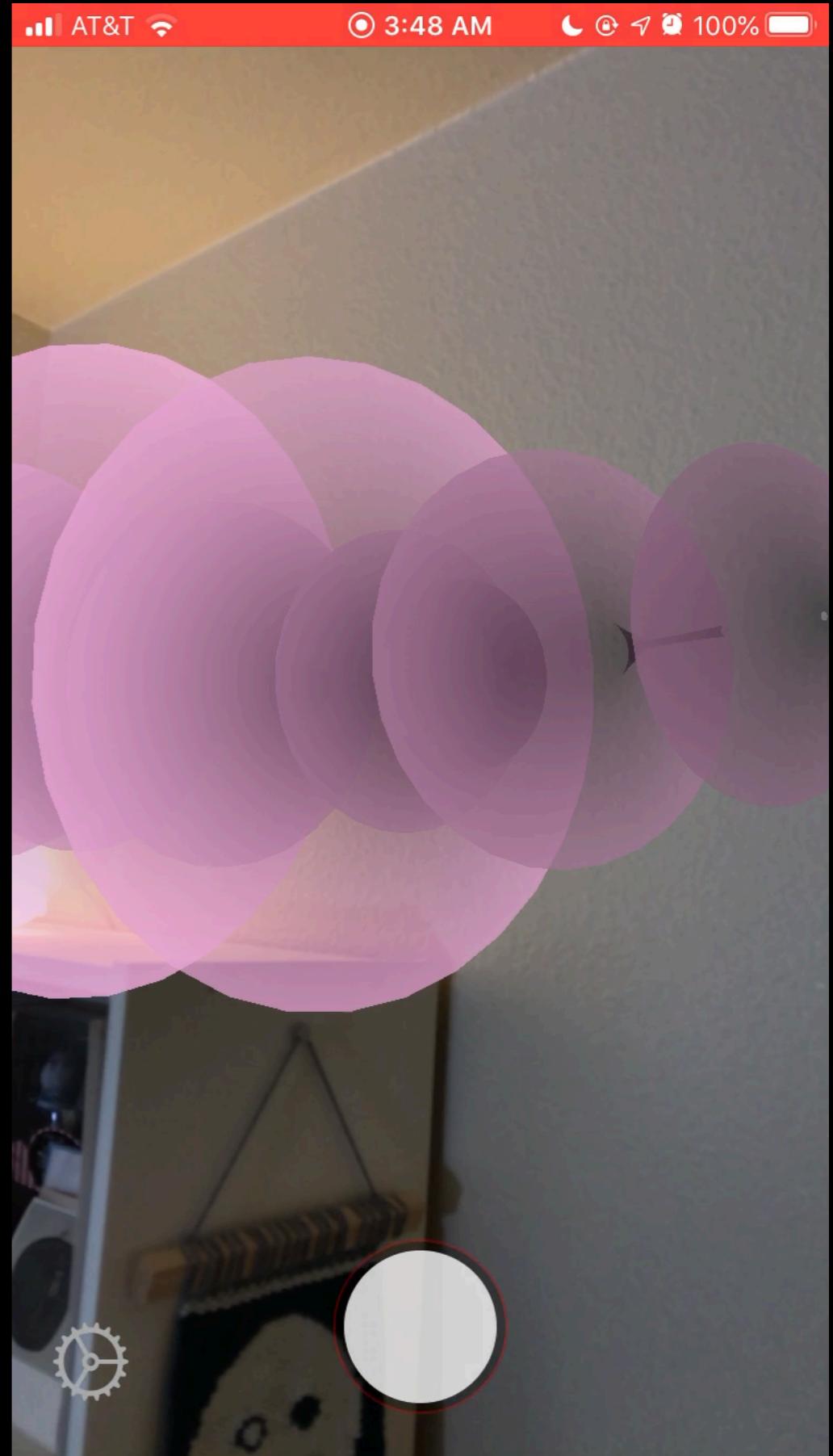
Apple ARKit
Swift

AudioKit
by Aurelius Prochazka
<https://audiokit.io>

Visualization

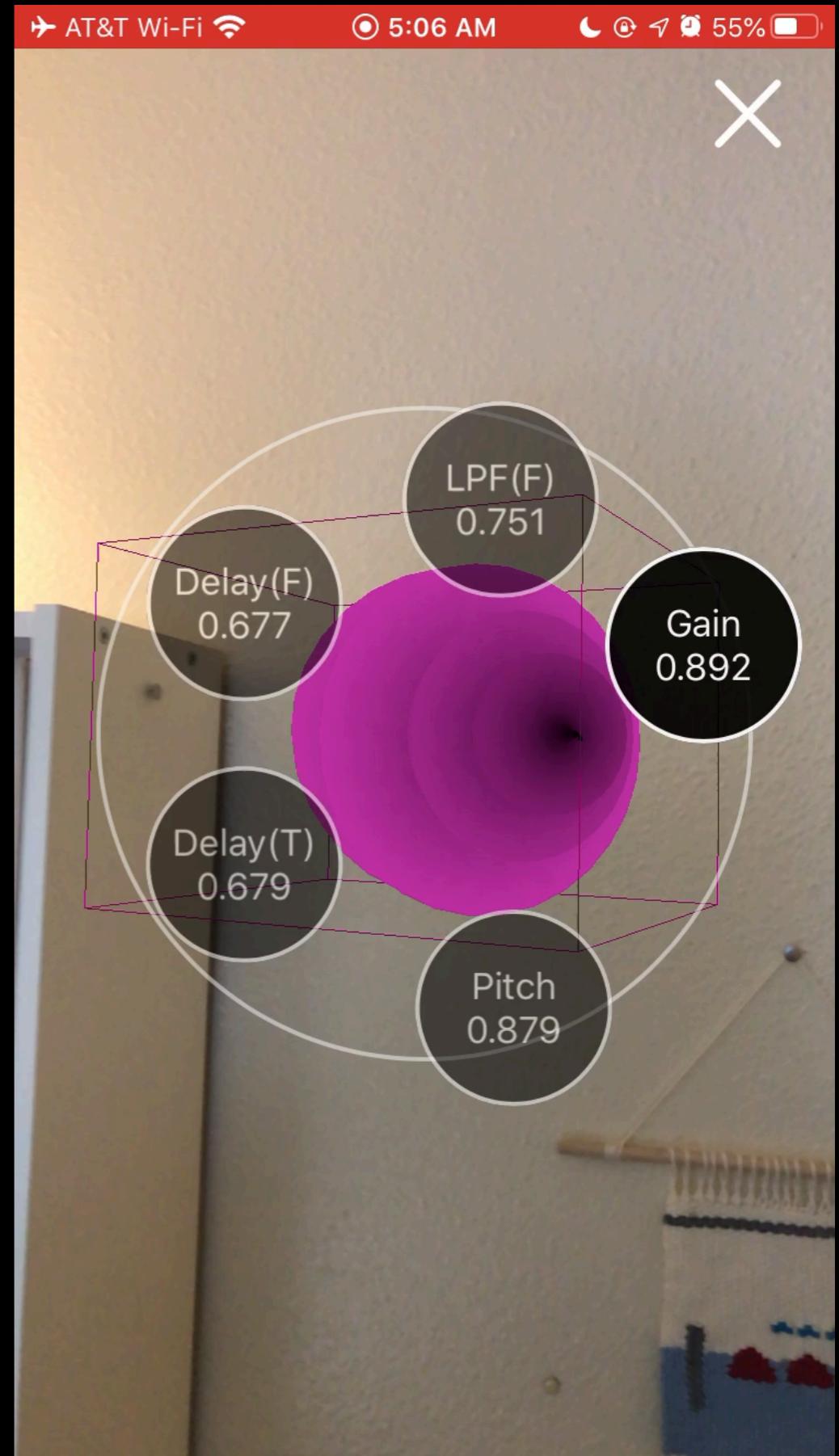
3D Waveform

- Visualizing a waveform as a 3D tube-like shape
- Radius representing amplitude
- Brightness variation



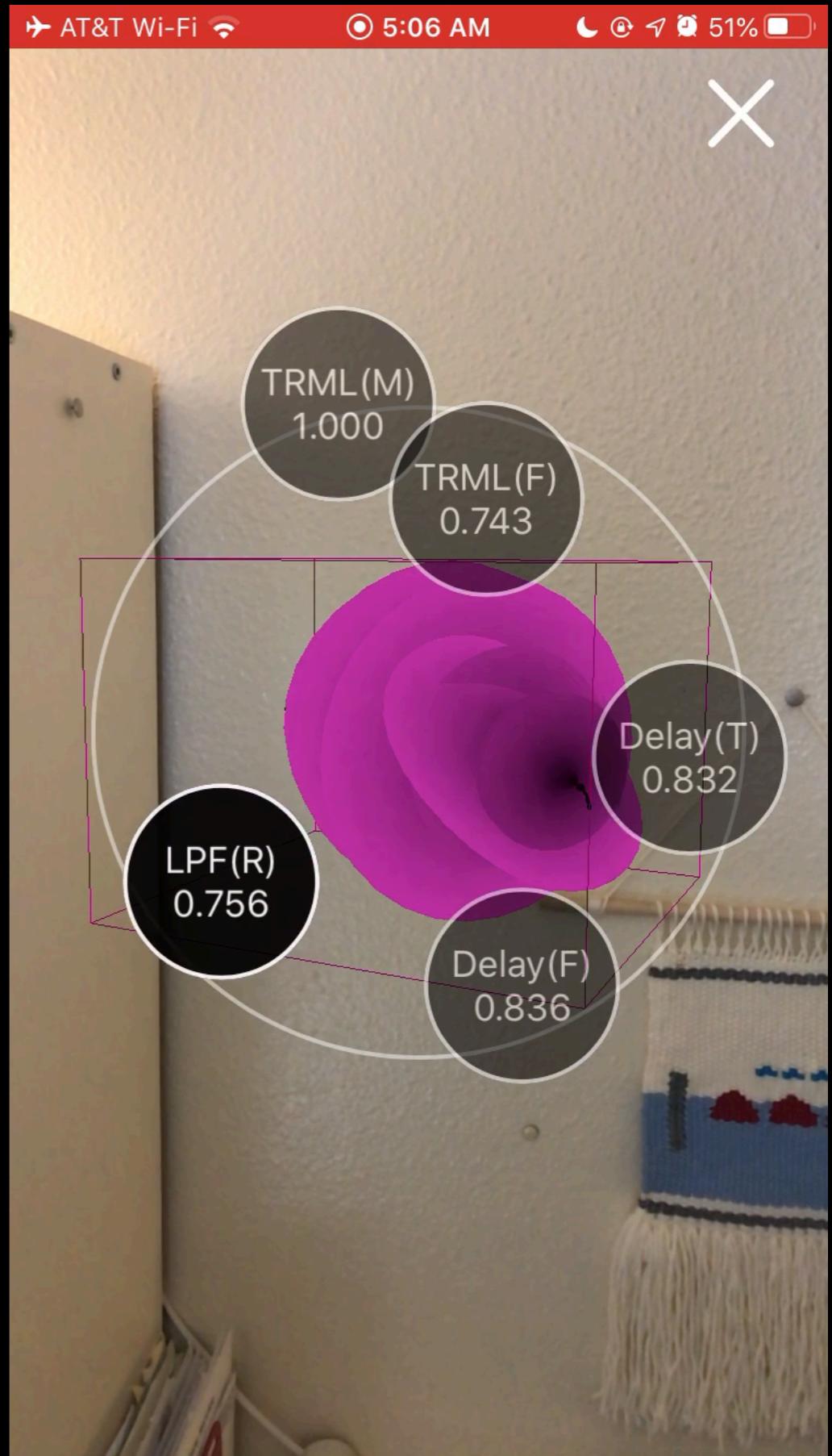
Sound Control Multitouch GUI

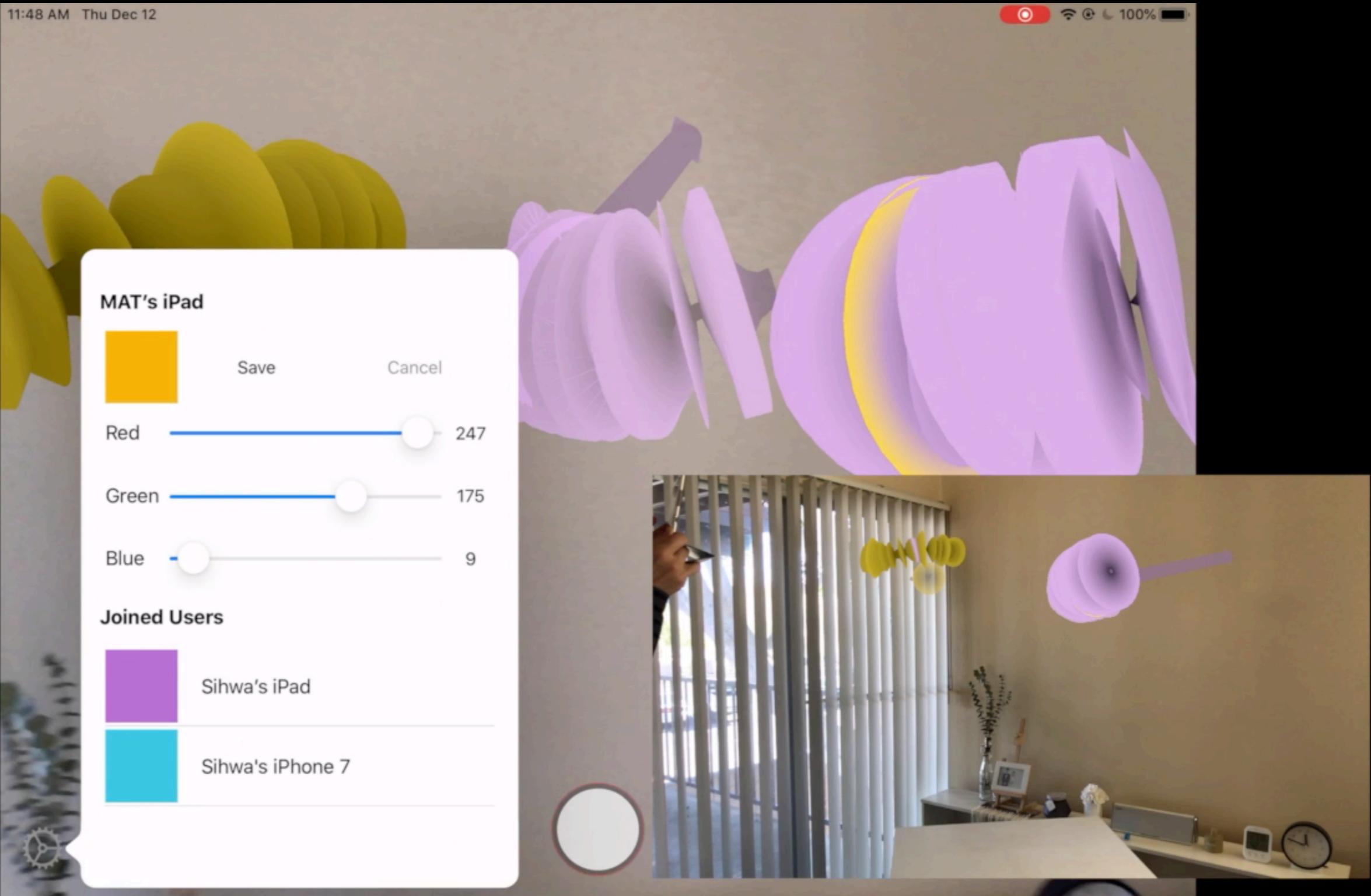
- *Catch and Release* interaction
- Moving circles within a boundary area
- Distance from the center
- Looping while touching any circle
- Selecting parameters in the slider-based GUI
- Up to 5 parameters



Sound Control Animation Effect

- Playback position
- Change of (some) parameters
 - Pitch, delay feedback & time
- By using Metal shader





Visualization Coloring

- User ID color for an ownership
 - Who created, selected, is controlling, or is playing
- Setting GUI for changing an ID color and showing a list of joined users

ARLooper (New Version)



<https://vimeo.com/379381583>

Future Work

- More shader effects for representing parameter changes
- More stable and reliable multi-user mode
- Relevant stage setup for performance
 - e.g. lighting condition, speakers, etc.
- Sound spatialization
- User test

Thank You!

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