



Haptic Tutor

A Vibrotactile system that lowers the threshold for learning musical instruments

Click here for video demo:

presents brief introduction, motivation and working demo

<https://youtu.be/2ujybMxB5pk>

Problem

- ❖ Learning a musical instrument sometimes has a high threshold of having to know music theory
 - ❖ It also involves motor tasks that require really good coordination between limbs and concentration while reading notation
 - ❖ Many students give up on their instrument because of this high threshold and complexity
 - ❖ Visual stimuli like reading notation from sheet or an app, following the teacher's actions, etc can get really complex
 - ❖ Better solution: “**feel**” the notes!

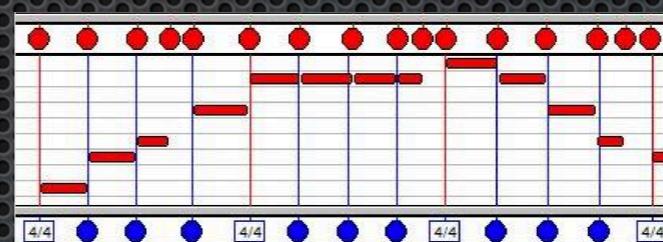
Solution

- **Context: teaching drums to a beginner:**

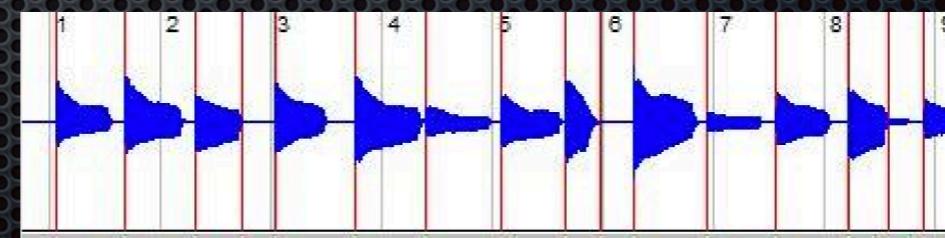
- Music teacher feeds in musical notation to the application



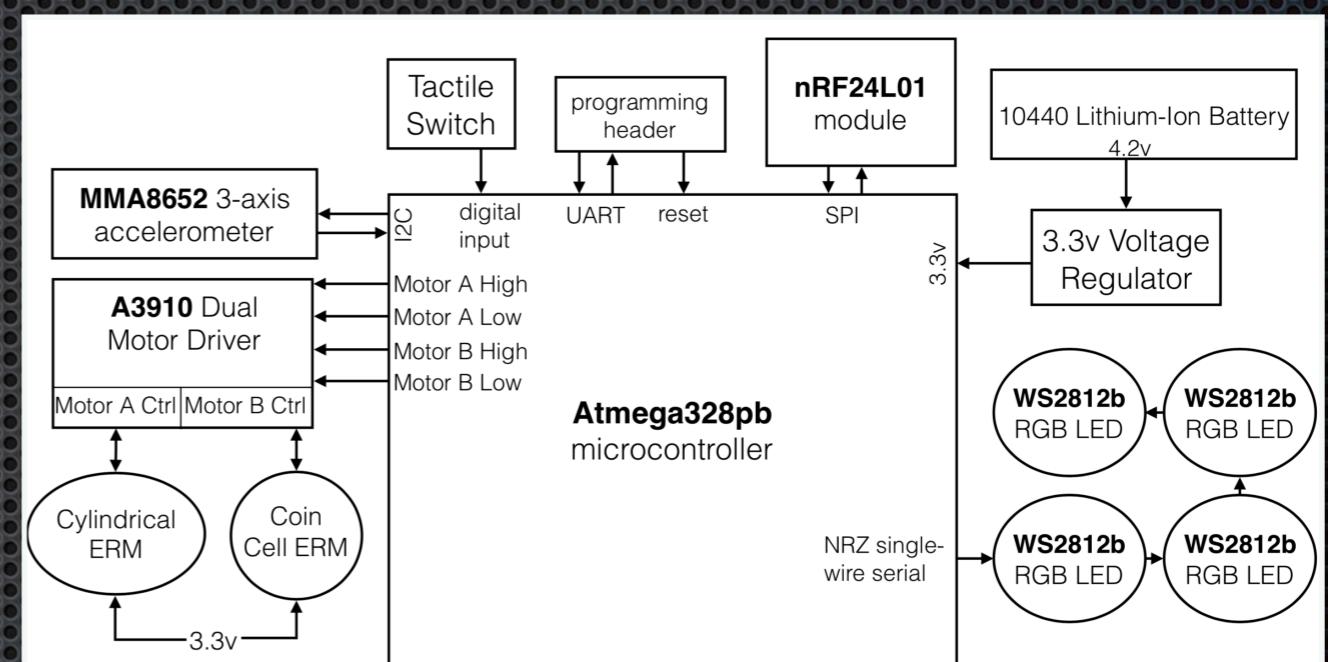
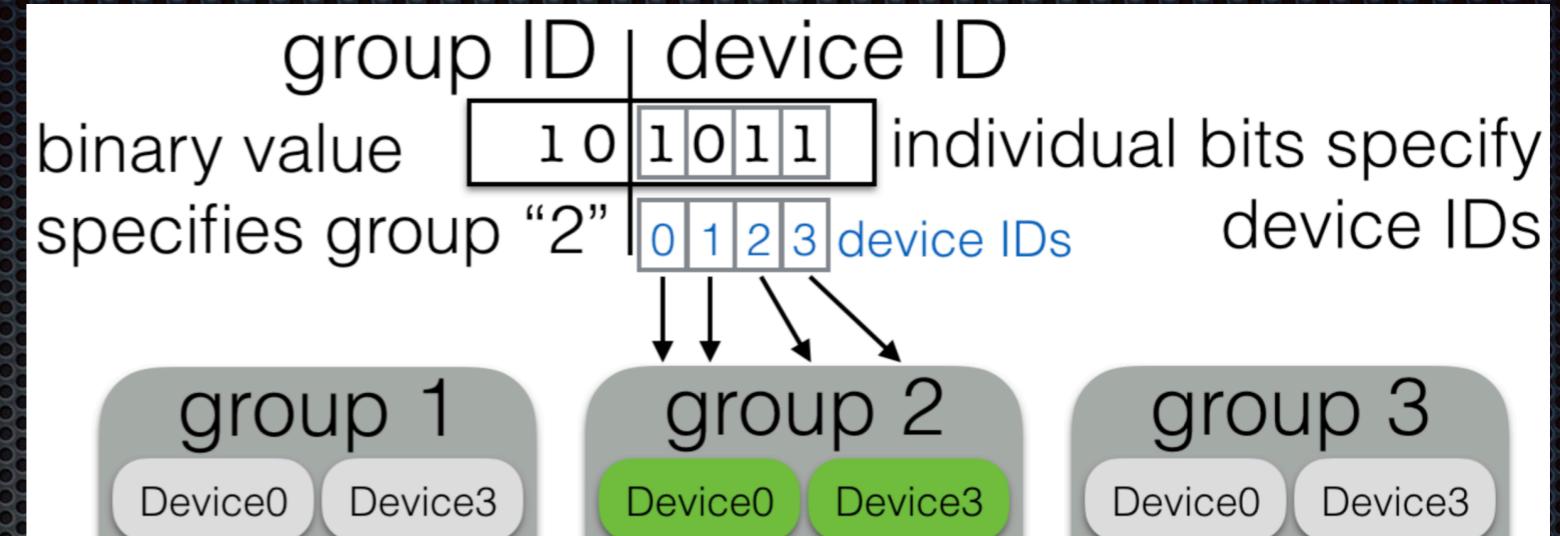
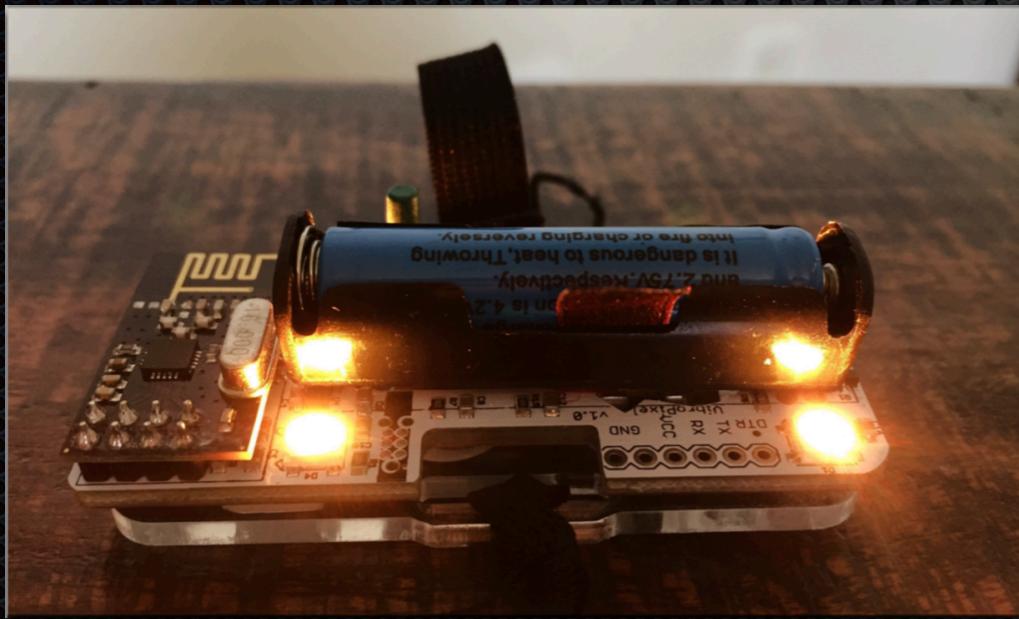
- Our application converts them to digital data using MIDI



- This digital data is converted to vibration triggers of varying intensities on the limbs of the drummer



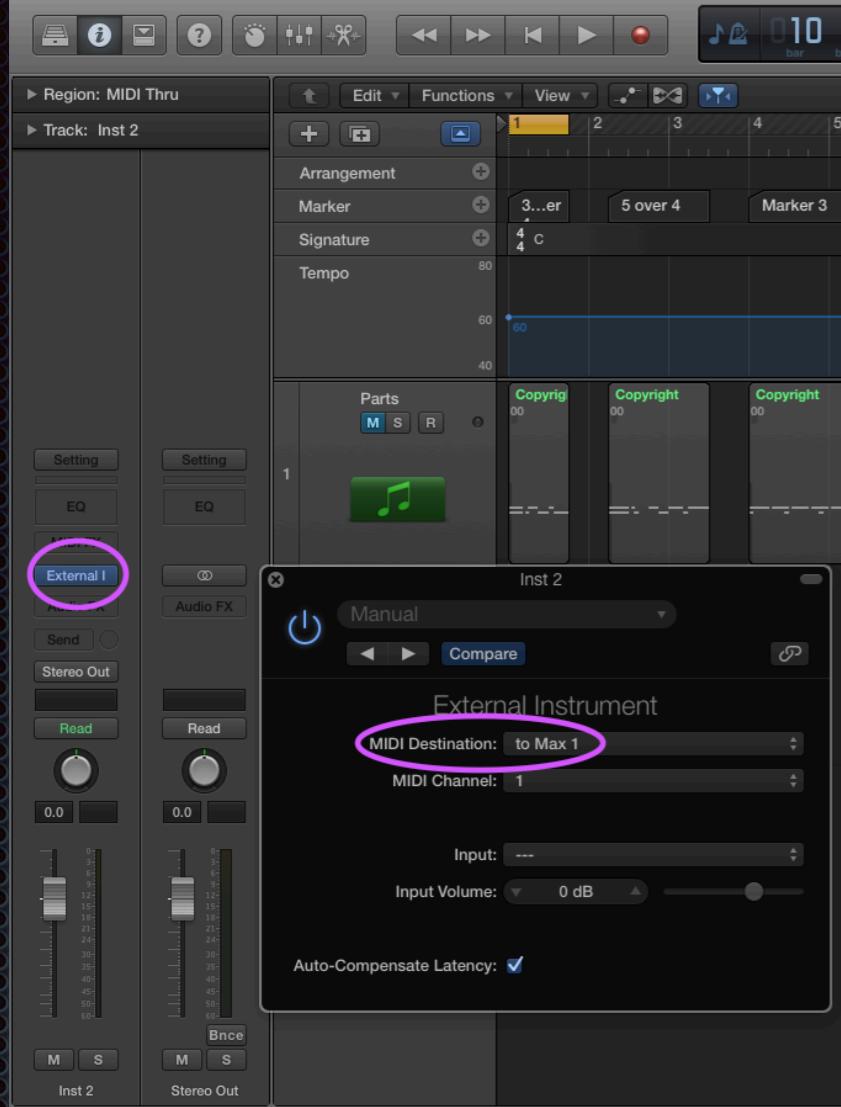
Hardware



Each vibrotactile device in the network is addressable individually to trigger the vibrations on individual limbs.

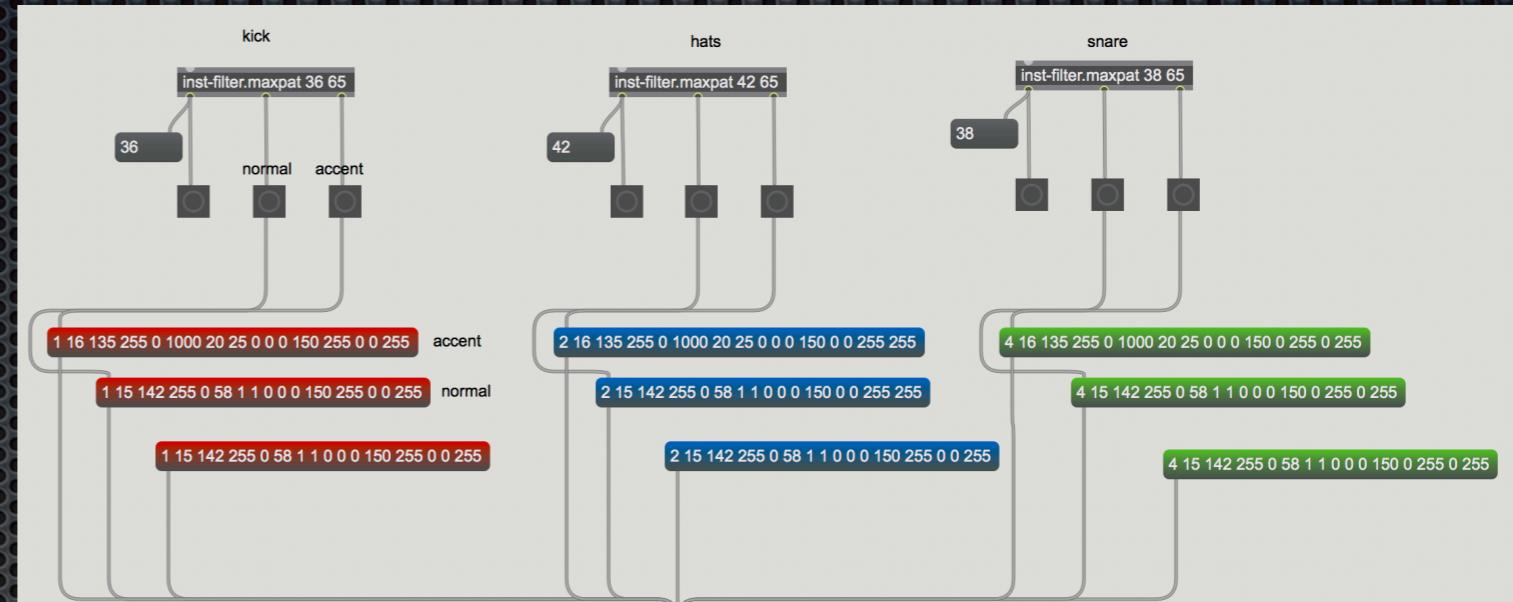
Specifications: mentioned in project description

Software

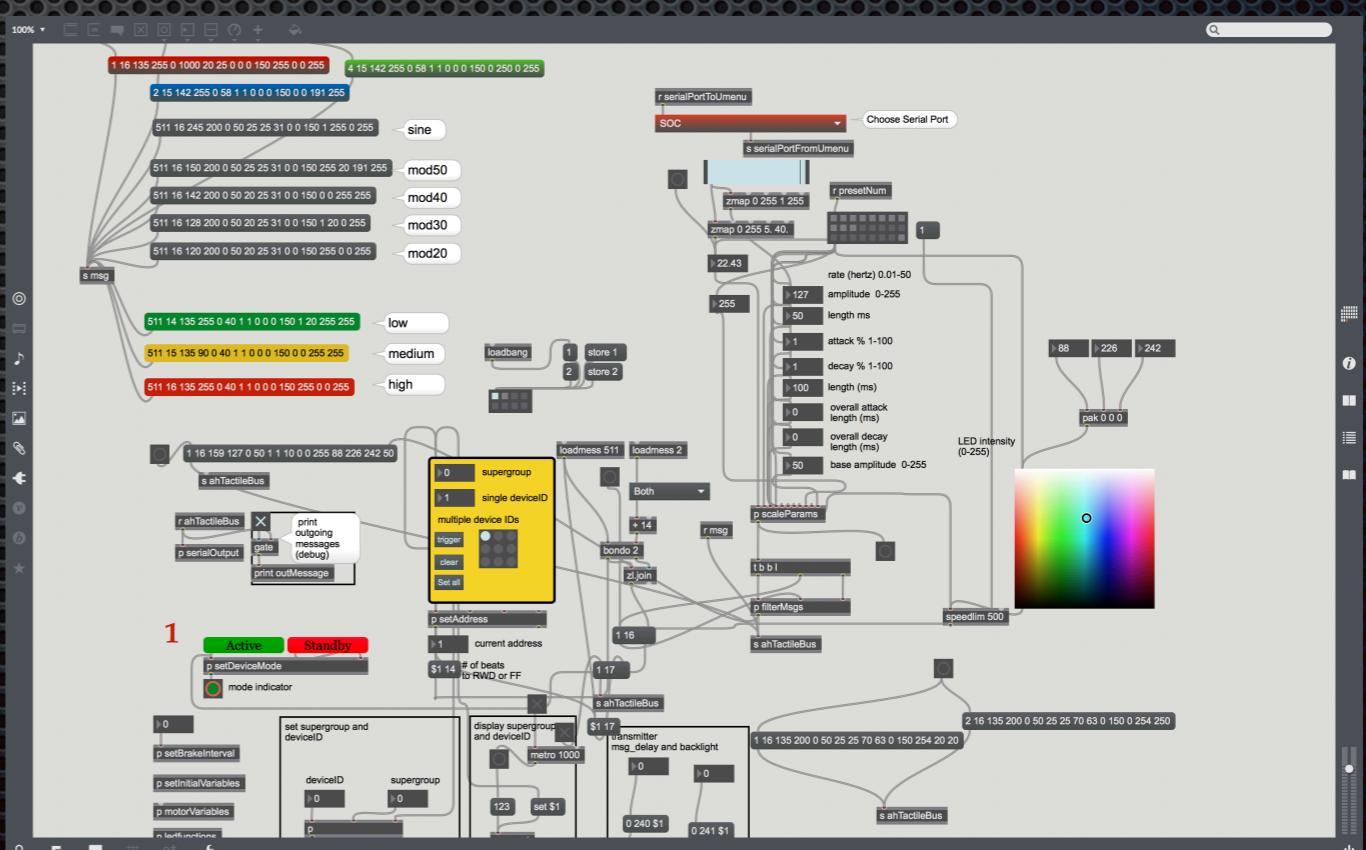


1. Music notation is fed into any DAW that supports MIDI and notation input

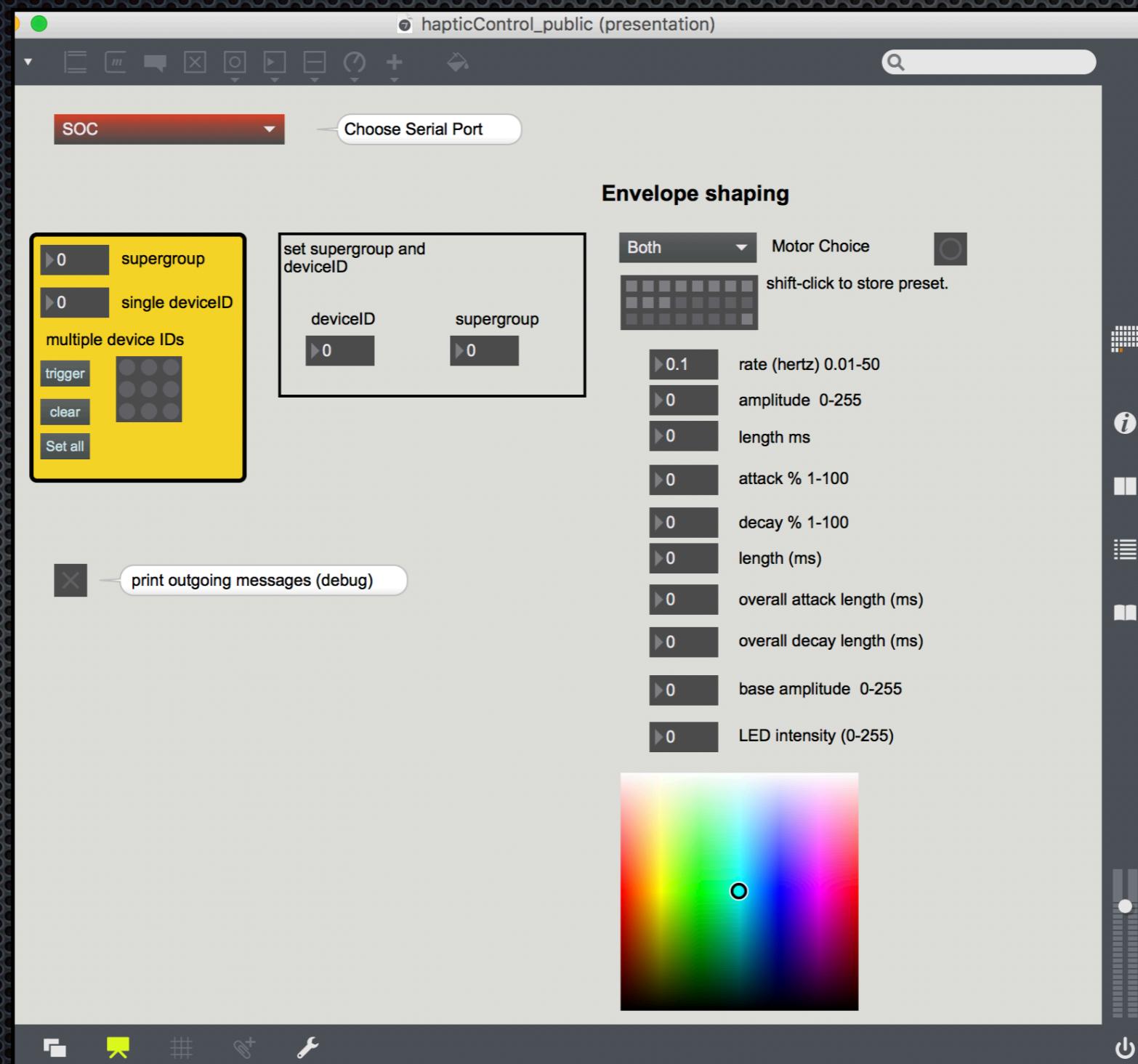
2. MIDI messages are received and parsed in the app (Python, C++, MaxMSP)



3. These messages are interpreted and sent wirelessly to the respective actuator via nRF. The message includes device ID and intensity of vibration to account for accented notes.



Vibration patterns, tonality and intensities can be customized and configured on the app



Working demo:

<https://youtu.be/2ujybMxB5pk>

