Audio Frequency Lab

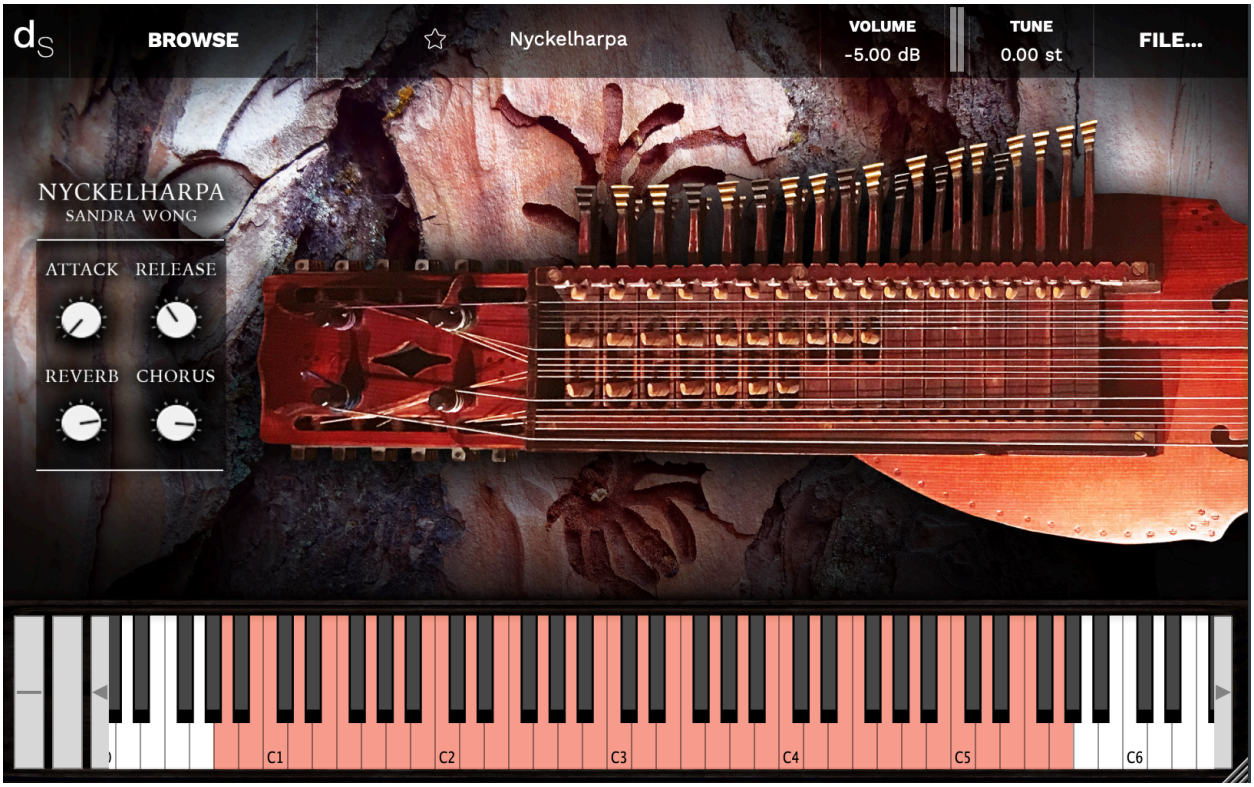
Sound Lab Fall 2024
ATLAS Institute
University of Colorado Boulder

Nyckelharpa Interactive Spatial Drone

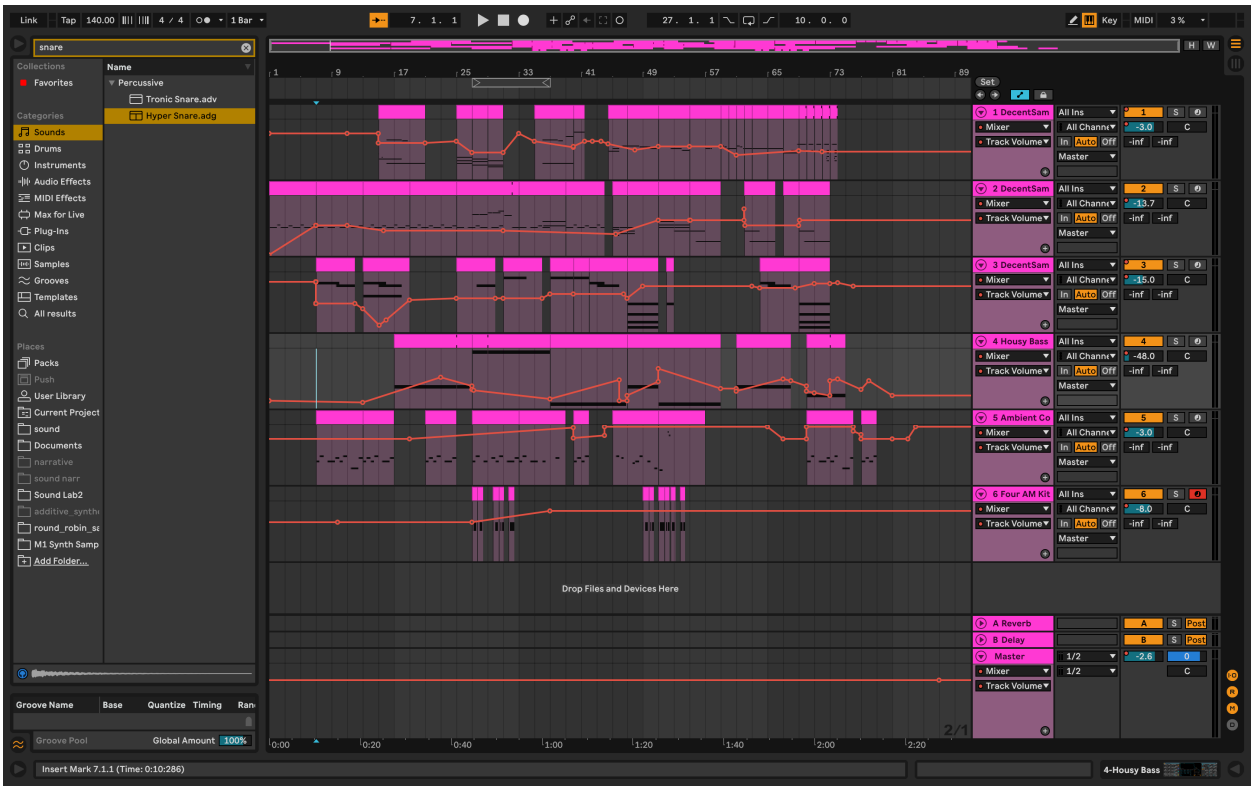
An interactive spatial audio composition/performance using a sampled Nyckelharpa honoring the work of early electronic musician and drone pioneer of Catherine Christer Hennix (1948-2023).

Student Team:
K.C. Yeneza - Drone composition and instrument programming
Mayla Seliskar - Nyckelharpa sampling and VST instrument development
Kyle Smith - Spatial Audio programming
Ryan Stewart - Spatial Audio programming
Zixiao Wang - Interactive Arduino MIDI programming
Woong Huh - Interactive Arduino MIDI programming
Faculty Team:
David Schaal - Audio Frequency Lab Director
Wayne Selzer - Audio Frequency Lab Technologist
Henry Richardson - Audio Frequency Lab Assistant
Special Thanks:
Sandra Wong - Nyckelharpa musician

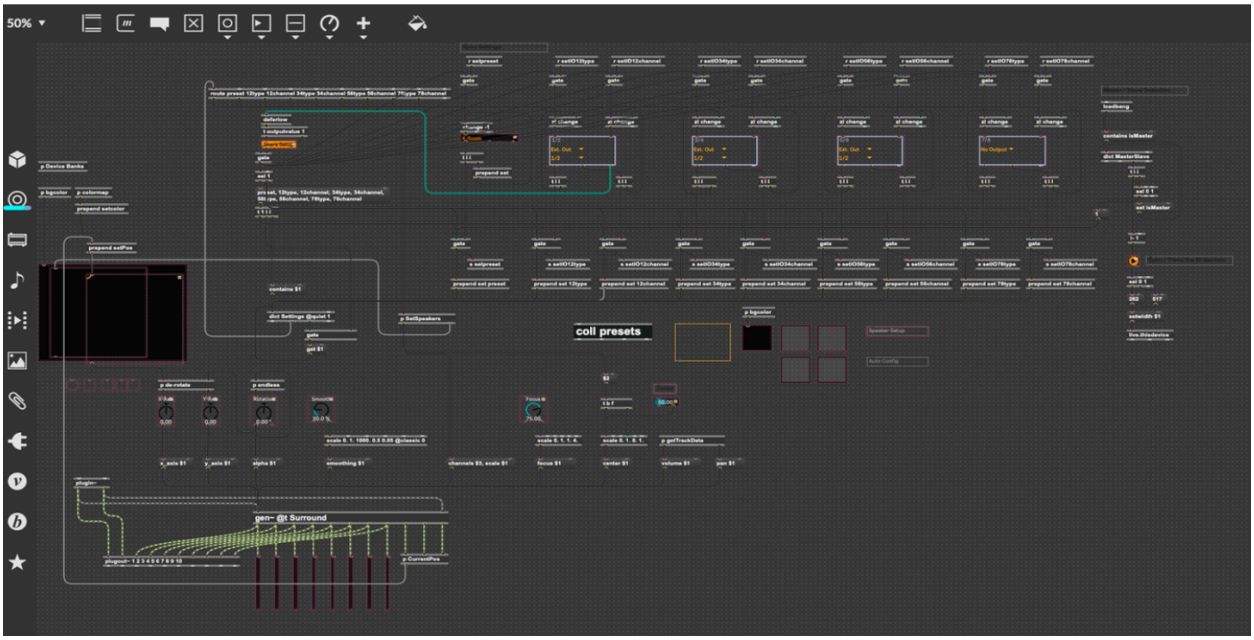
Jerry Laiserin - Spatial audio equipment donation
Nyckelharpa Sampled Instrument



Drone Composition



Surround Panner Max for Live patch (tweaked)



Arduino MIDI joystick controller code

Select Board

one_JOY.ino README.md

```
#include <MIDIUSB.h>
// Define MIDI Notes
#define NOTE_C1  33
#define NOTE_C2  65
#define NOTE_C3  131
#define NOTE_C4  262
#define NOTE_D4  294
#define NOTE_E4  330
// LED connections
#define RED_LED_PIN 16
#define GREEN_LED_PIN 15
#define BLUE_LED_PIN 14
// Button connections
#define RED_BUTTON 9
#define GREEN_BUTTON 8
#define BLUE_BUTTON 7
// Joystick connections
#define JOY_VRX A2
#define JOY_VRY A3
#define JOY_SW 3
#define SPEAKER 2
#define NOTEDURATION 200  // milliseconds
// Potentiometer
#define POT_PIN A0
int controller = 0;
int controller_prev = 0;
#define CONTROLLER_DELTA 1
```