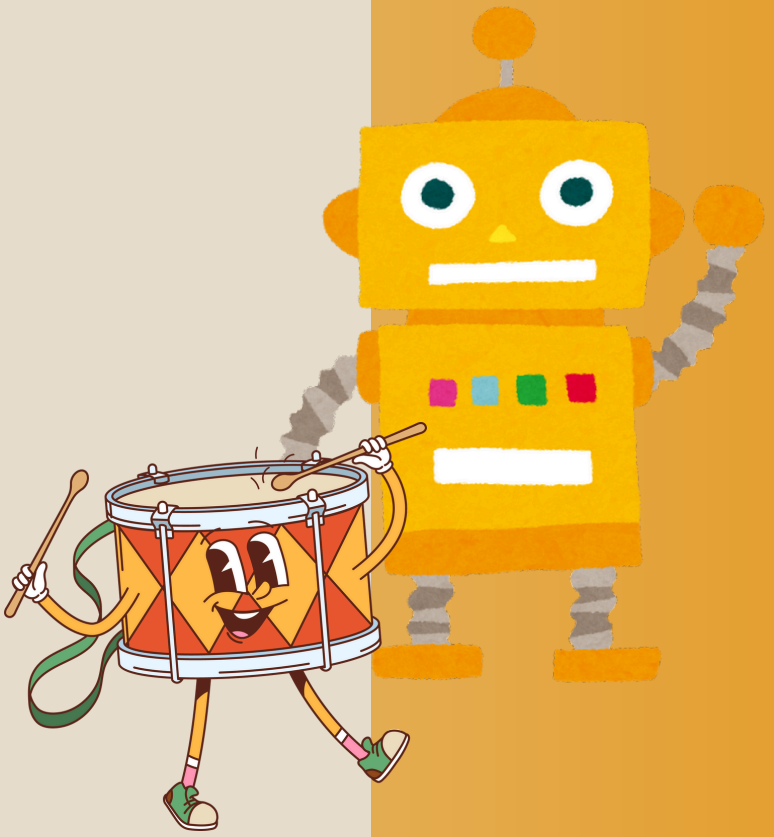
ROBOKIDS

Applied Project



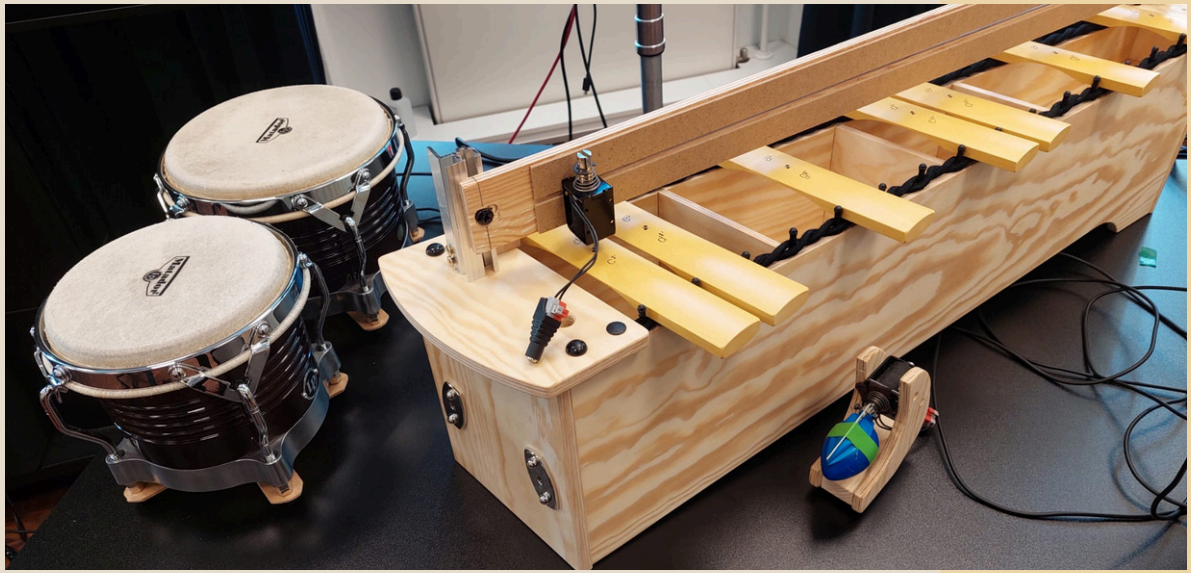
SEREN SARAC YILMAZ

INTERDISCIPLINARY COLLOQUIUM III

INTRODUCTION

- This presentation summarizes the current development stage of the Robo-Percussion project.
- Since the idea presentation, significant progress has been made in dataset creation, AI model training, and hardware preparation.
- The goal remains: AI-assisted musical co-creation for students and children.

INSTALLATION



DATA SET

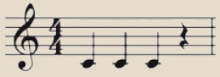
Fachdidaktik EMP 2
Hochschule für Musik Nürnberg

Emine Yaprak Kotzian

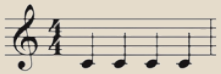
SAR MAKARAYI

Begleitmöglichkeiten

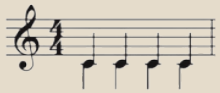
Grundton (3 Viertel)



Grundton (Metrum)

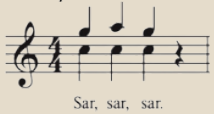


Parallelschlag

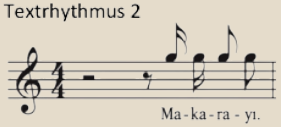


Wechselschlag

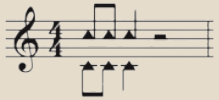
Textrhythmus 1



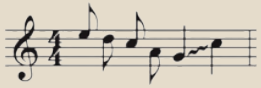
Textrhythmus 2



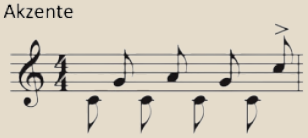
Klangfarbe (Schlägelstile)



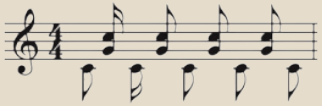
Glissando



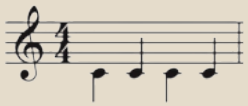
Akzente



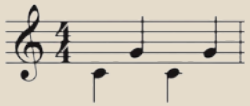
Spiel mit 3 Schlägeln



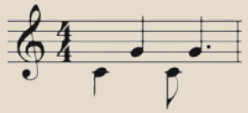
Wechselschlag



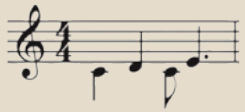
Bordun



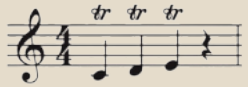
Rhythmische Variation



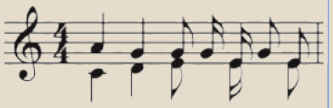
Variation der Tonhöhe



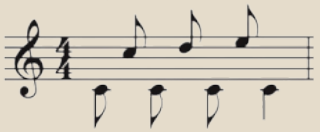
Tremolo



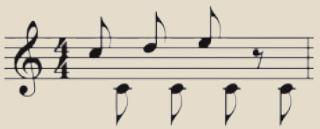
Gegenbewegung



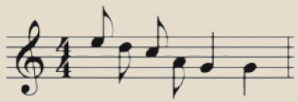
Eine bewegte Hand



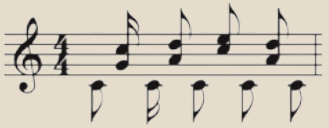
Rhythmische Verschiebung



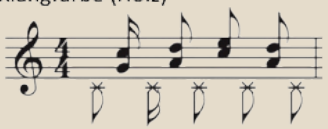
Tonleiter



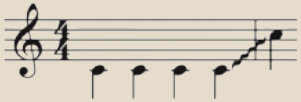
Aufsteigend, zweistimmig

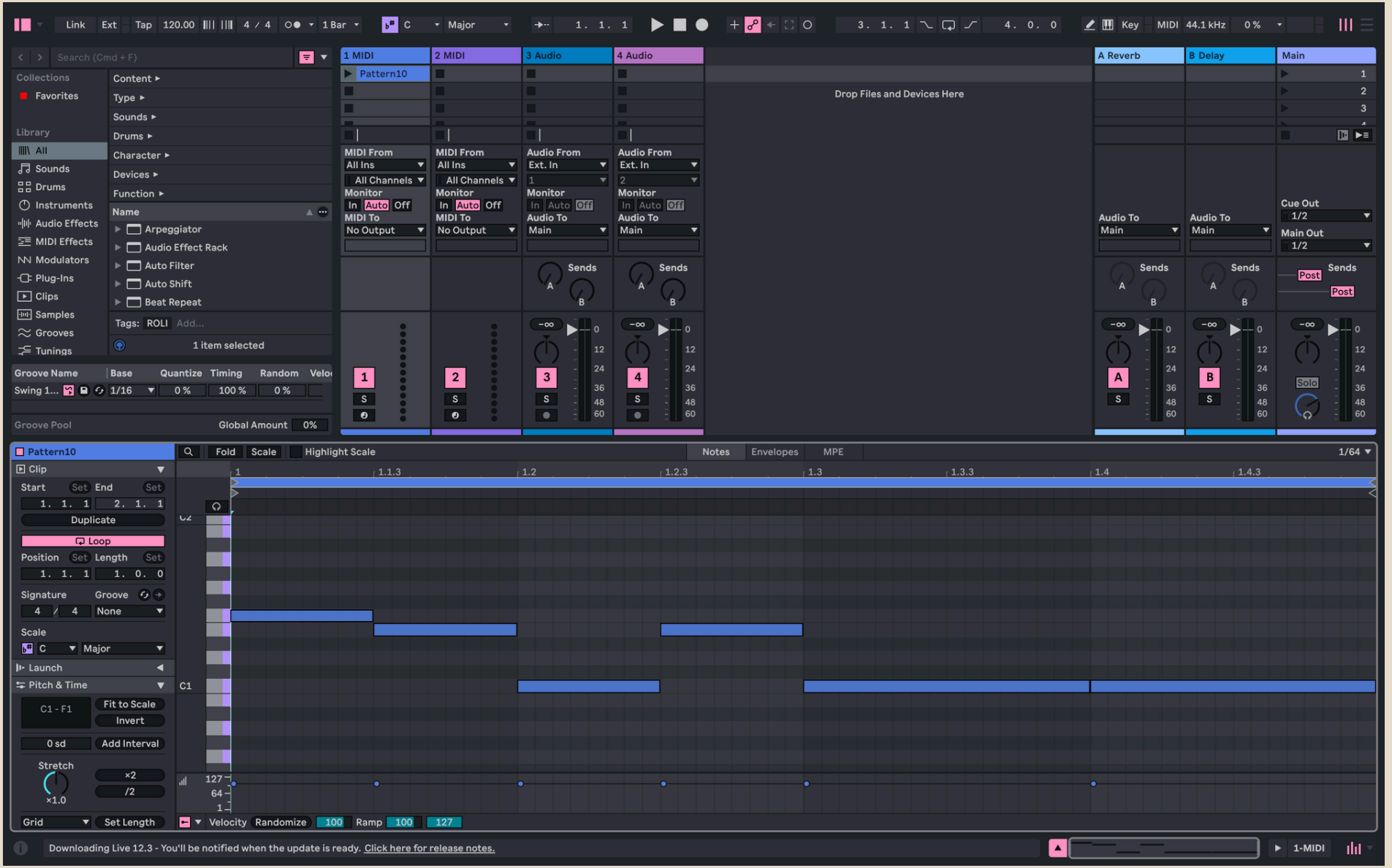


Klangfarbe (Holz)

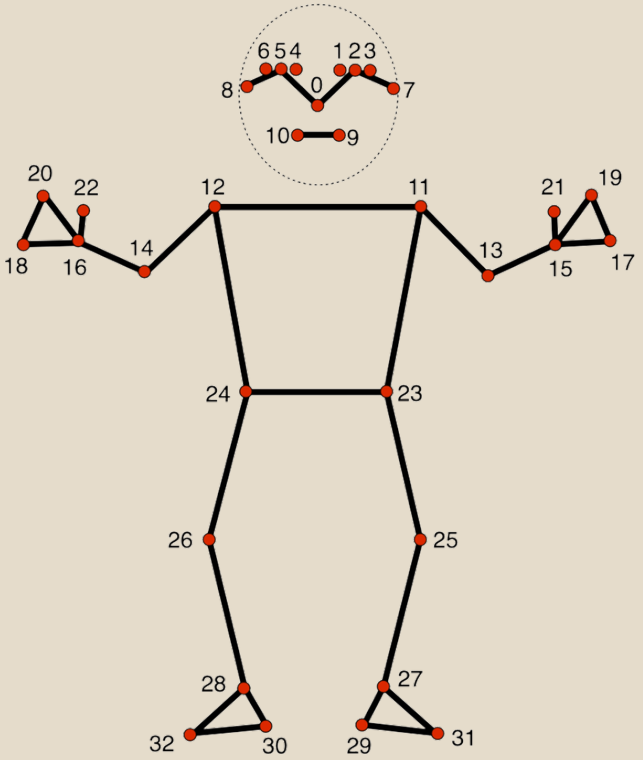


Schlussmotiv




Link
Ext
Tap
120.00
4 / 4
1 Bar
C
Major
1 . 1 . 1
3 . 1 . 1
4 . 0 . 0
Key
MIDI
44.1 kHz
0 %
Search (Cmd + F)
Collections
Favorites
Library
All
Sounds
Drums
Instruments
Audio Effects
MIDI Effects
Modulators
Plug-Ins
Clips
Samples
Grooves
Tunings
Content
Type
Sounds
Drums
Character
Devices
Function
Name
Arpeggiator
Audio Effect Rack
Auto Filter
Auto Shift
Beat Repeat
Tags: ROLI Add...
1 item selected
Groove Name
Base
Quantize
Timing
Random
Swing 1...
1/16
0 %
100 %
0 %
Groove Pool
Global Amount
0%
1 MIDI
2 MIDI
3 Audio
4 Audio
Pattern10
Drop Files and Devices Here
MIDI From
All Ins
All Channels
Monitor
In Auto Off
MIDI To
No Output
Audio From
Ext. In
Audio To
Main
Sends
A Reverb
B Delay
Main
Cue Out
1/2
Main Out
1/2
Post
Solo
Pattern10
Clip
Start
End
Duplicate
Loop
Position
Length
Signature
Groove
None
Scale
C
Major
Launch
Pitch & Time
C1 - F1
Fit to Scale
Invert
0 sd
Add Interval
Stretch
×1.0
×2
/2
Grid
Set Length
Fold
Scale
Highlight Scale
Notes
Envelopes
MPE
1/64
Velocity
Randomize
Ramp
Downloading Live 12.3 - You'll be notified when the update is ready. Click here for release notes.
1-MIDI

CODING
MEDIAPIPE



Google AI. (n.d.). MediaPipe Pose Landmarker [Computer software]. Retrieved December 2, 2025, from: https://ai.google.dev/edge/mediapipe/solutions/vision/pose_landmarker

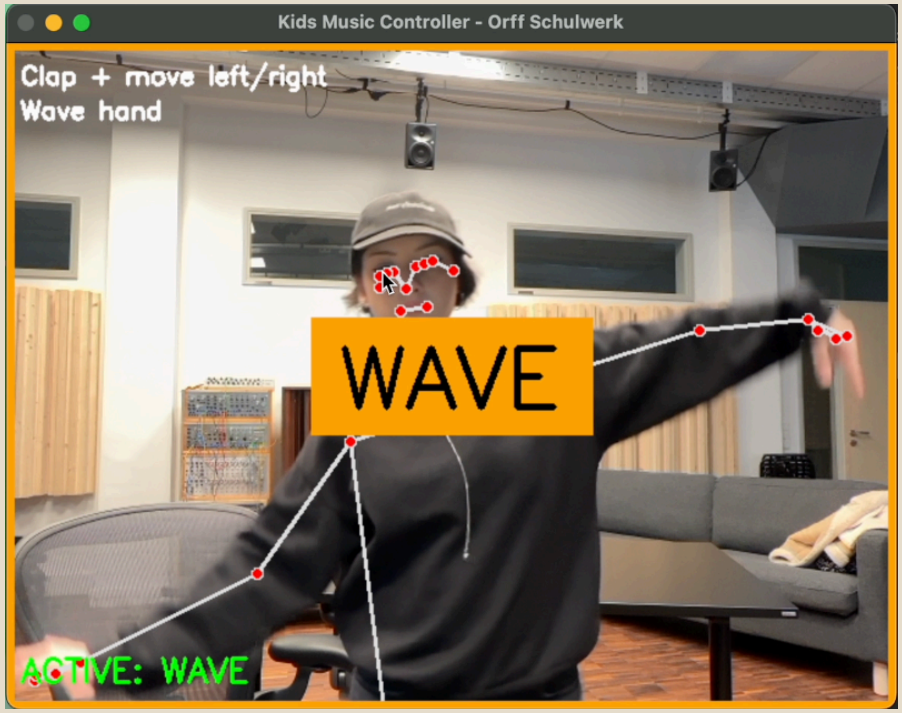
Agents Editor

robopercussion_controller.py

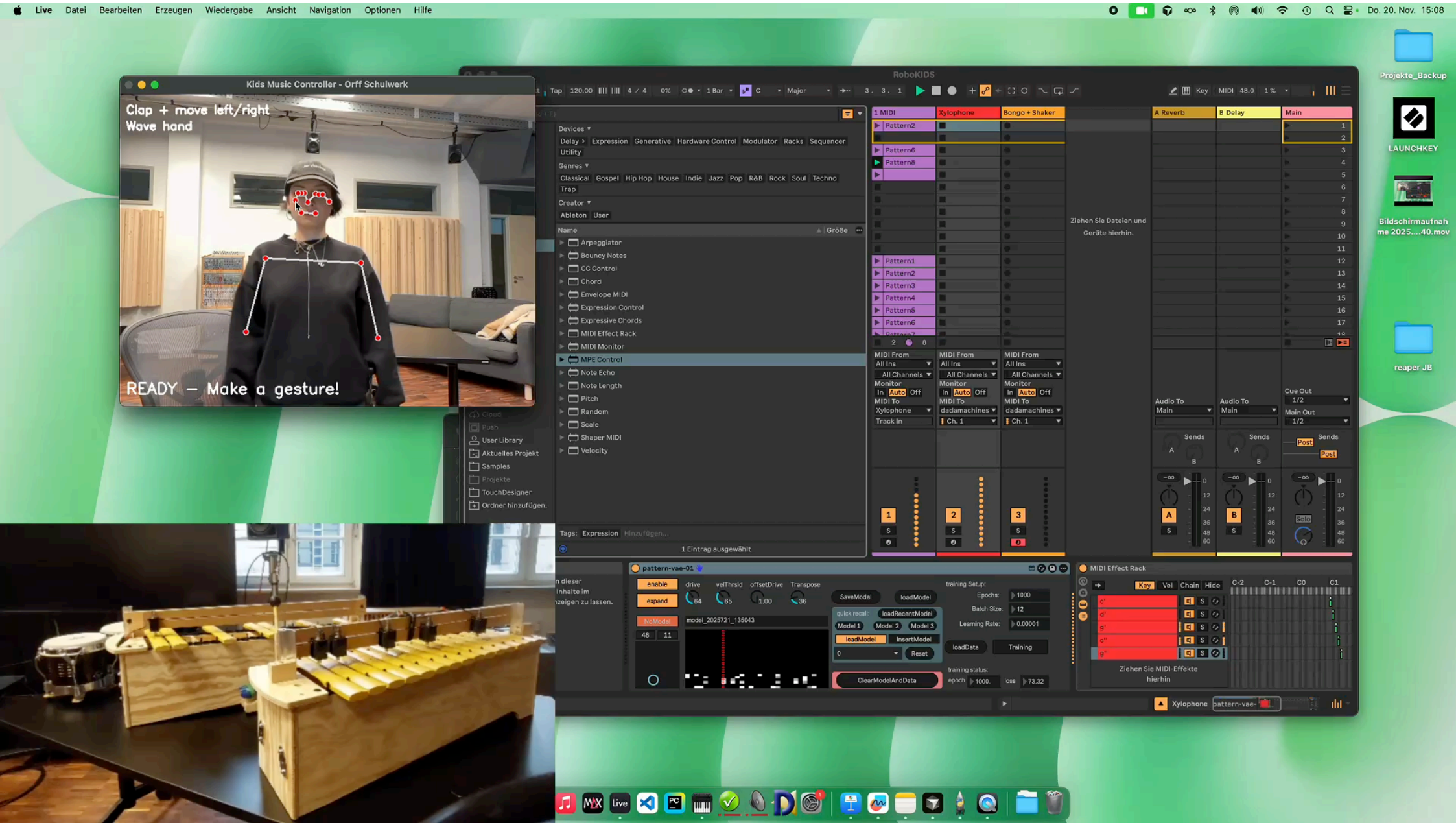
KIDS_MUSIC_CONTROLLER2.py | LASTONE_ROBOKIDS.py

Users > musicvan > Desktop > KidsMusicController-Package > LASTONE_ROBOKIDS.py > ...

```
#!/usr/bin/env python3
"""
Kids Music Controller - Orff Schulwerk Approach
Body movement control for educational music software
Perfect for children and music education installations
"""

import cv2
import mediapipe as mp
import rtmidi
import time
import ssl
import math

# Fix SSL certificate issue
ssl._create_default_https_context = ssl._create_unverified_context

# ===== KID-FRIENDLY SETTINGS =====
MIDI_PORT = "IAC Bus 11 Bus 1"
MIDI_CHANNEL = 1

# Gesture detection settings
GESTURE_COOLDOWN = 0.15  # Slight delay for stability
GESTURE_THRESHOLD = 0.1  # Lower threshold for easier detection

# Continuous control settings
CONTINUOUS_CONTROL = True  # Enable continuous control while in gesture pose
CONTROL_SENSITIVITY = 7.5  # Slightly faster response for clap

# Visual feedback colors (BGR format)
COLORS = {
    'clap': (0, 255, 255),      # Yellow
    'wave': (0, 165, 255),      # Orange
    'default': (255, 255, 255)  # White
}

# Smoothing and response settings
#  - Lower smoothing = faster response, higher = smoother but slower
#  - Max delta clamps how fast the CC can change per frame
SMOOTH_CLAP = 0.50      # Balanced smoothing for faster response
SMOOTH_WAVE = 0.55      # Balanced smoothing for faster response
MAX_DELTA_CLAP = 4      # Allow a bit faster knob catch-up
MAX_DELTA_WAVE = 4      # Allow a bit faster knob catch-up
```

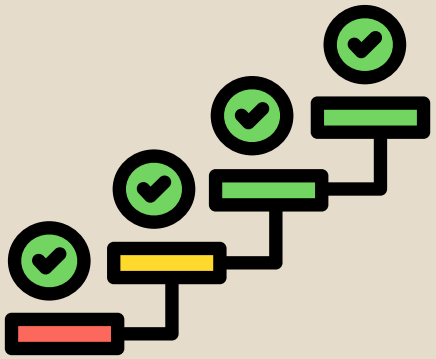

Kids Music Controller - Orff Schulwerk
Clap + move left/right
Wave hand
WAVE
ACTIVE: WAVE

Kids Music Controller - Orff Schulwerk
Clap + move left/right
Wave hand
CLAP
ACTIVE: CLAP


Live Datei Bearbeiten Erzeugen Wiedergabe Ansicht Navigation Optionen Hilfe
Do. 20. Nov. 15:08
Kids Music Controller - Orff Schulwerk
Clap + move left/right
Wave hand
READY – Make a gesture!
RoboKIDS
Projekte_Backup
LAUNCHKEY
Bildschirmaufnahme 2025....40.mov
reaper JB
Devices
Delay
Expression
Generative
Hardware Control
Modulator
Racks
Sequencer
Utility
Genres
Classical
Gospel
Hip Hop
House
Indie
Jazz
Pop
R&B
Rock
Soul
Techno
Trap
Creator
Ableton
User
Name
Größe
Arpeggiator
Bouncy Notes
CC Control
Chord
Envelope MIDI
Expression Control
Expressive Chords
MIDI Effect Rack
MIDI Monitor
MPE Control
Note Echo
Note Length
Pitch
Random
Scale
Shaper MIDI
Velocity
User Library
Aktuelles Projekt
Samples
Projekte
TouchDesigner
Ordner hinzufügen.
1 MIDI
Xylophone
Bongo + Shaker
A Reverb
B Delay
Main
Ziehen Sie Dateien und Geräte hierhin.
pattern-vae-01
enable
expand
NoModel
drive
velThrsld
offsetDrive
Transpose
SaveModel
loadModel
loadRecentModel
Model 1
Model 2
Model 3
InsertModel
Reset
loadData
Training
ClearModelAndData
training Setup:
Epochs:
Batch Size:
Learning Rate:
training status:
MIDI Effect Rack
Ziehen Sie MIDI-Effekte hierhin
Xylophone

NEXT STEPS

- Movements and melodies used in ORFF Schulwerk education will be added.
- Adjustments will be made in the code so that the rhythms stop when paused.
- Control in Ableton will be made closer to accurate.
- The workshop sequence will be designed from start to finish, and trials with students will begin around January.



THANK YOU FOR LISTENING

SEREN SARAC YILMAZ
INTERDISCIPLINARY COLLOQUIUM