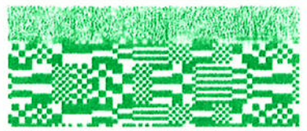
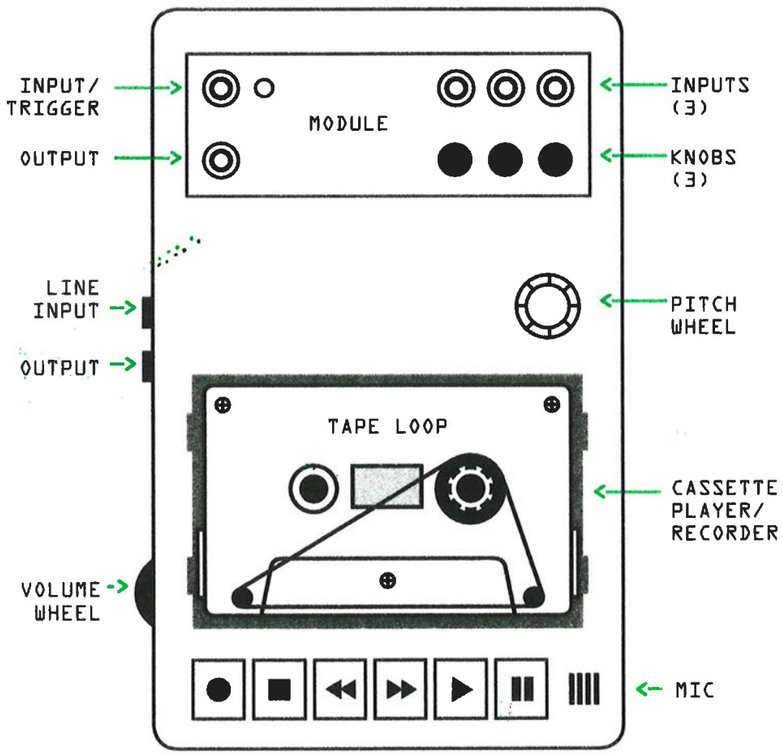
MANUAL//

In music, tape loops are loops of magnetic tape used to create repetitive, rhythmic musical patterns or dense layers of sound when played on a tape recorder. Originating in the 1940s with the work of Pierre Schaeffer, they were used among contemporary composers of 1950s and 1960s, such as Steve Reich, Terry Riley, and Karlheinz Stockhausen, who used them to create phase patterns, rhythms, textures, and timbres. <...> In the 1980s, analog audio and tape loops gave way to digital audio and application of computers to generate and process sound. (source: Wikipedia)





INTERFACE OVERVIEW

With the idea of combining both playback techniques, I explored each unique characteristics, technical limitations and their potentials to function within a hybrid in order to create a new interface where they could work together, influence and even fight each other. (Like an audible 'internal dialogue', switching between intuition and reason.)

WHAT YOU NEED

1) A DESKTOP CASSETTE PLAYER

a multitrack recorder or a walkman with an amplifier. You can make a pitch control to your device by adding a potentiometer.

2) CASSETTE TAPES

scissors and some transparant scotch tape to create a seamless loop. You can find great tutorials online to produce and record the most solid tape loops.

3) PARTS TO ASSEMBLE MODULE:

- **1 Capacitor 104, 100nF package cap-pth-small2; variant pth2 ▸C1-111**
- **5 3.5mm Switch Jack size 3.5mm; variant 1; part # PJ301M-12 ▸J1,J2,J3,J7**
- **4 Rotary Potentiometer (Small) package THT; size Rotary - 9mm; track Linear; maximum resistance 10kΩ; type Rotary Shaft Potentiometer ▸P1,P2,P3**
- **2 0Ω Resistor (bands 5; package THT; tolerance ±5%; pin spacing 400 mil; resistance 0Ω) ▸R40,R41**
- **4 1kΩ Resistor (bands 5; package THT; tolerance ±5%; pin spacing 400 mil; resistance 1kΩ) ▸R36,R37,R38,R39**
- **2 10kΩ Resistor (bands 5; package THT; tolerance ±5%; pin spacing 400 mil; resistance 10kΩ) ▸R42,R43**
- **1 150Ω Resistor (bands 5; package THT; tolerance ±5%; pin spacing 400 mil; resistance 150Ω) ▸R44**
- **1 SWITCH-MOMENTARY-2 (package tactile-pth; variant pth) ▸S10**

To make vactrols:

- **4 Photocell (LDR) resistance@ dark 300 kOhms@ 10 seconds; package THT; resistance@ luminance 16 kOhms@ 10 lux ▸LDR1-LDR4**
- **4 Red (633nm) LED package 3 mm [THT]; color Red (633nm); w/leg ▸LED15-18**

Parts that go to backside of PCB:

- **1 Header 5x2 package 2x5-ra ▸JP7**
- **2 Male Headers 1x16 ▸NANO**
- **2 Female Headers 1x16 ▸NANO**
- **1 Arduino Nano (Rev3.0) type ▸NANO**
- *** 1 LED and some wire to add to an input signal to the audio input (optional)**

4) MINI-JACK AUDIO SPLITTERS

so you can send the audio signals from both outputs to a mixer and be able to connect them to inputs.

BUILDING

SOLDERING AND ASSEMBLING

Solder the parts to the corresponding location (▸XOO) on the PCB. To make the vactrols: place the head of the photocells against the top of the red LEDS and use black heatshrink to wrap them into darkness. (Google for more info.)

MERGE

If you want to build your module in the housing of the cassette player, open up the device, remove the internal speaker and carefully make a square on the top part that fits the PCB. You can enlarge the battery compartment to give the module some space. The top part of the module can be covered with a (transparant) front panel. (Laser cutting template included!)

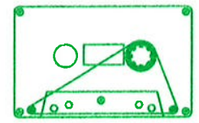
PREPARATION

SAMPLES

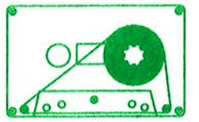
Prepare some samples (both 4 seconds max.) you want to be played by the module and from the tape loop. You can use cut up speech, layer sounds and/or make other interesting combinations. To replace the samples in the provided code, covert to hexadecimal code and modify 'sample.h'.

RECORDING TAPE LOOPS

Make sure to record on maximum volume (+6dB, in mono). This way, the audio signal produces a certain voltage that allows the module to be triggered. There are different ways to determine the length of the loop.



+/- 4 sec. loop



+/- 5 sec. loop

PROVIDED ARDUINO CODE (C++)

Use a mini USB cable and Arduino software to flash code on the module. (Mini USB-cable is also used to power Arduino Nano!) The provided codes 'Chaos on Trigger' and 'Deep Flakes' are just examples how to combine the analog and digital playback methods. You can customize the code the way you want.

PLAYING

CONNECT INPUTS & OUTPUTS

By using patch cables and the adjustable knobs on the interface, you can modify the behaviour of the digital sample by using the analog outputs. Flakes can be used as a standalone device or be part of a modular setup.

RECORD, DELAY, FEEDBACK, ETC.

You can also use the tape player to record, make delays, use in-/outputs to create and use feedback. Use two Flakes to make optimum use of it's capabilities.