New add-on voice: SpeakJet vox

I guess that I don’t have to present the SpeakJet anymore

Let me highlight some of the functionalities that make this chip a very entertaining one to operate.

The chip

Natural phonetic speech synthesis.

SpeakJet uses allophones that can be chained to produce words, but it continuously calculates how to **best transition** them for a realistic speech.

Four special prosodic codes (\SLOW \FAST \STRESS \SOFT) allow the user to fine-tune the expression of the next allophone :

alphabet: \AY \LO \FAST \FF \FAST \AX \STRESS \SOFT \BE \EY \SLOW \TT

Further tuning with the Rate, Pitch, Bend, and Volume parameters adds to the quality of the speech.
These parameters are fully accessible via CV control.

43 sound effects, and 12 DTMF Touch Tones

Using these sound effects can create authentic glitches and

beep sequences.

Programmable, 5-channel synthesizer

The SpeakJet is also a tone synthesizer that can create complex sounds (this is not covered by our code yet)

Our code

In this first code release, I implemented the following functions :

Allophone

The user can choose which group to play: Vowels/Voiced/Voiced Stop/Voiceless/All Allophone/All Effects/DTMF

The priority can be given to:

- the Gate signal (Gate mode)
- optimized transitioning (Queue mode)
- to the allophone timing itself (Speech mode)

Number

There are three modes to generate numbers: CV controlled, Looping or Random.

SD DIC

The code will read a phonetic file and allow the user (or the code in the loop and random mode) to choose a line from that file.

Example of the file content:

```
along: \UX \LO \OH \OH \SLOW \NGO
alpha: \AY \LE \FAST \FF \UX
alphabet: \AY \LO \FAST \FF \FAST \AX \STRESS \SOFT \BE \EY \SLOW \TT
already: \AW \LE \FAST \RR \EY \DE \IY
```

also: \SLOW \AW \SLOW \LO \SLOW \SO \OWWW
although: \FAST \OH \SLOW \LO \DH \SLOW \OWWW
always: \SLOW \AW \LE \WW \EYIY \SLOW \SE

There is a huge collection of words to get you started :

PhraseALator MIDI files for SpeakJet

1 file(s) 790.00 KB
Login is required to access this page
Login

PhraseALator dictionary file for SpeakJet

2 file(s) 99.95 KB
Login is required to access this page
Login

135400 Words in phonetic for SpeakJet (CMUDict)

1 file(s) 5.00 MB
Login is required to access this page
Login

User control

The potentiometer P1-P5 affects the **pitch, rate, bend, repeat, and volume.**

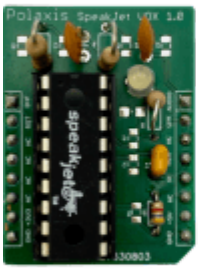
While playing with the interface, the display contextually shows the information about the changes made (rotary, switch,

and potentiometers)

A long click brings the user back to the main menu.

A double click in the SD DIC mode brings the user to the file selection menu.

There is a screen saver that will activate after 10 minutes. Turn the rotary to reactivate the display.



SpeakJet
VOX

- ## SpeakJet vox

  € 69,00 Add to basket

World’s end sequence : sounds from Osaka

Check this track from World’s end sequence
I am sure you will recognize some typical sounds source

world’s end sequence · LOVEBEAT Imaginary continuation :Re(Image of DEMO & LOOPS_Track)

Here is World’s end sequence’s comment about it :

I like to listen to electronic music such as KRAFTWERK, YMO, Yoshinori Sunahara, Cornelius, etc.
I just learned about the POLAXIS speech synthesizer the other day and haven’t mastered it yet, but it’s a very creative machine. The world of voice synthesis is very deep.
I haven’t met Jean-Luc yet, only by e-mail, but I like his personality very much.
This song is an imaginary continuation of Yoshinori Sunahara’s 2001 masterpiece, “Lovebeat”, based on his short outtakes.
I hope to see you again in the next song.

Also, check this reconstruction of The Robots :

world’s end sequence · We Are The Robots_Kraftwerk

Help us find the tagline that speaks to you

https://www.polaxis.be/forum/topic/help-us-find-the-tagline-that-speaks-to-you/#postid-20

Andrew Shaw latest Kraftwerk cover : Tribal / Nummweltverschmutzung

Another incredible piece of work by Andrew Shaw.

As in all of his tracks, Andrew has put together a perfect cover of a Kraftwerk song, here: Tribal / Nummweltverschmutzung.

Beyond his numerous musician skills, Andrew is also a **meister** in taming the Votrax SC-02 chip included in the Robovox.

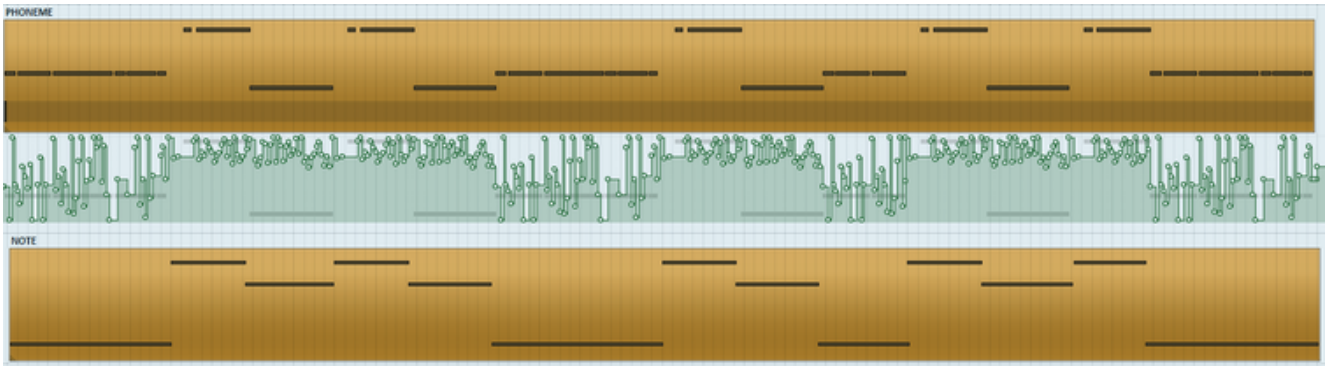
In this track, the chip_capabilities are pushed to the max, so I had to ask Andrew how he did it. I wanted to know if he used the external carrier audio input to achieve these results.

He did not.

He is pitching the chip and heavily modifying the staccato function in the PEC VST plugin :

Robovox PEC VST plugin

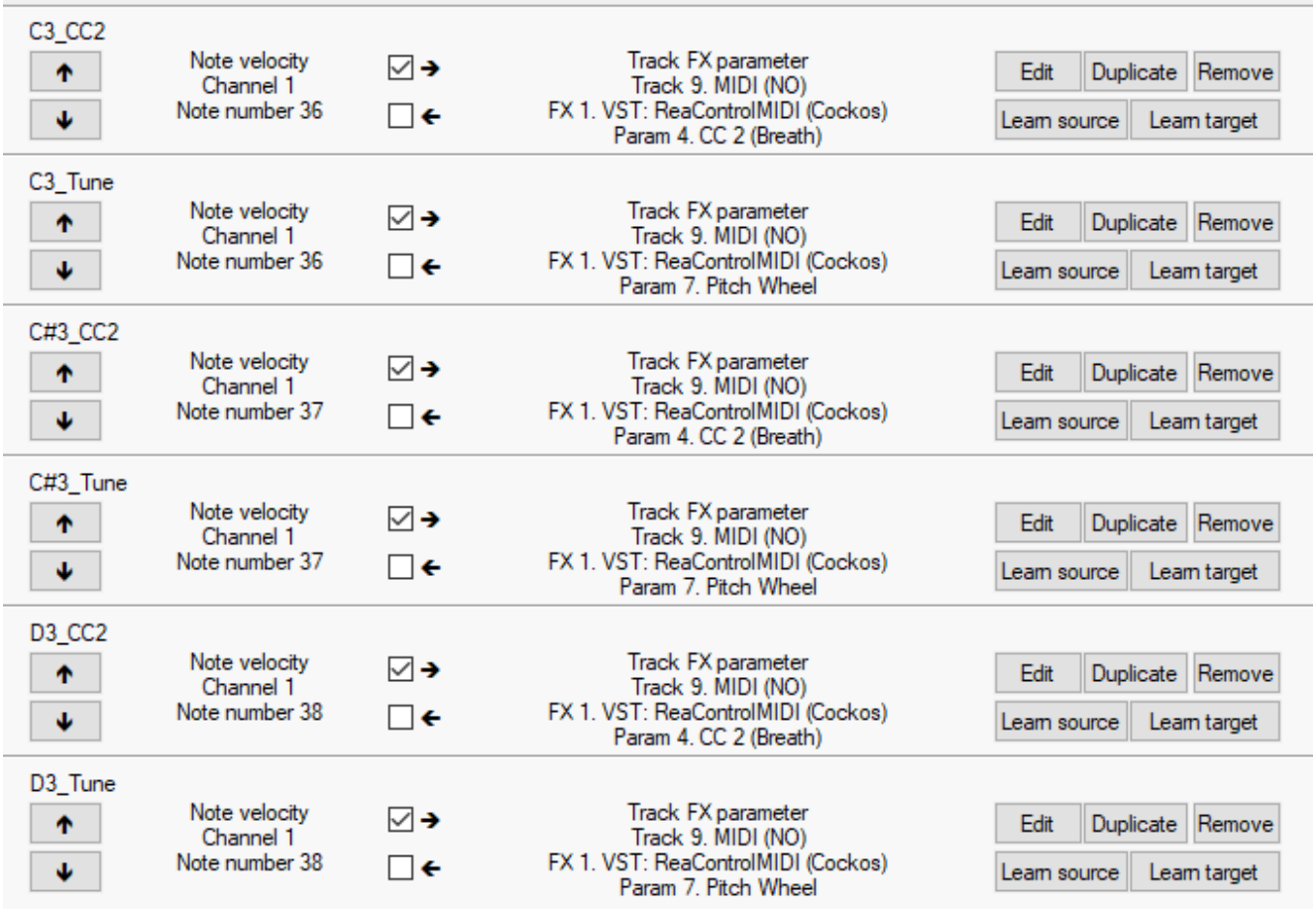
2 file(s) 5.26 MB
Download



He also used **CC3 to drive the control rate** (movement of the formant position – see the SC-02 datasheet) at near its max value to make it sound more choppy.

Votrax SC-02 Datasheet

1 file(s) 2.78 MB
Download
Here’s a picture of just some of the automation done in Reaper, **driving the note pitch (CC2) and the master clock (CC1)**



Andrew kindly shared the Votrax MIDI file so you can download it and test it on your [Robovox]

Andrew supposes that there are a few parts for this where Florian presumably used two chips at different pitches.

Andrew had to work around this by recording the Votrax through a harmonizer – it won't be quite the same with this "simpler" midi file.
(I just played it on my system : it is still very fun and impressive)

MID
–

Tribal Nummweltverschmutzung

1 file(s) 27.72 KB
Download

Ezzential Electro

Electro Records is working on a collection of 36 vinyl records collaborating with 36 different artists they consider essential to understanding the current electro music movement. They have released the first six records, and you can hear them here: https://www.electro-records.com/catalogo/ezzential-electro/660/.

Transpac is one of the artists making beautiful and mesmerizing music with an excellent retro style.
He is certainly using some of my speech synthesizers. (also here: https://www.electro-records.com/catalogo/sci-fi-electro/585/)

Check this track by Transpac on the album Telecommunication. Track B2 Minitel.
Can you guess which module is in action ? I think this is the Mea Vox!

Updating the shop

As you may have noticed, I am busy merging the old blog into a more user-friendly shop.

I still have a lot to do to merge the old blog pages and the products pages.

The goal is to let you understand better all my products and how to use them.

I know the documentation isn’t always as expected, but I keep editing it with your feedback.

Thanks for your patience

Emy’s ecosystem

Hardware	Features	Firmware	Status	Todo	Buy
Emy 2018	Emy emulates the famous TMS5220/TMS5100 speech chips and read the LPC compressed data from the SD card to allow infinite vocabulary !	Emy QC 20/10/2019 ver. 1.2 Emy 2018 firmware 13/01/2023 ver. 1.5	Stable	Text-to-speech from SD	

Hardware	Features	Firmware	Status	Todo	Buy
Emy 2019	Same as Emy 2018 USB keyboard support Generic panel to support additional speech synth.	Emy QC 20/10/2019 ver. 1.2 Emy Firmware 27/01/2024 ver. 2.6b	Stable	Text-to-speech from SD	BUY NOW
Emy + Kaiwa-vox	Robotic voice Japanese text-to-speech. Reads Romaji text from the SD card.	Kaiwa Firmware 22/01/2023 ver. 2.3	Stable	USB Keyboard text entry	BUY NOW BUY NOW
Emy + VAX-vox	Dectalk text-to-speech. Reads plain English from the SD card and from the USB keyboard	Vax Firmware 08/02/2023 ver. 0.34	Beta		BUY NOW
Emy + Mea-vox	vintage MEA8000 French speech chip (Formant generator) Text-to-speech from SD card and from the USB keyboard	Mea Firmware + MIDI USB 08/05/2022 ver. 0.6	Alpha		BUY NOW

Use a USB keyboard for text

entry

Use a standard USB keyboard to enter some text and have it spoken live on VAX (soon on Kaiwa and Emy).

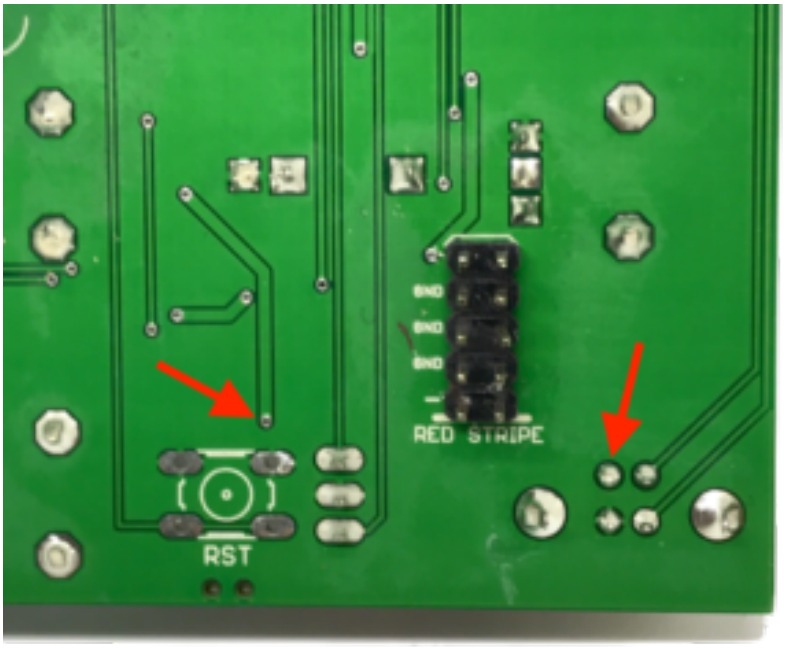
The keyboard is connected to a USB gender changer (provided with the last edition of Emy) which also powers the keyboard.

The speech can be triggered by the Gate signal, pressing the rotary or by pressing **Enter** on the keyboard.
Basic editing is possible with the **backspace** character while the **Escape** key is erasing the current text.

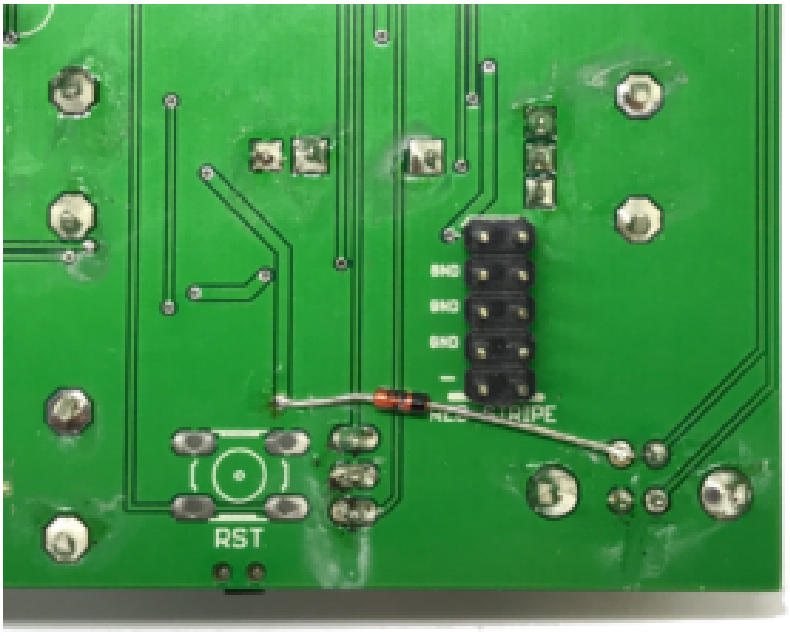
There is also a gate out signal on the Busy/Aux jack that stays up while the keyboard is pressed (it is not needed for the speech but I thought it could be fun to use it)

The newer version of Emy’s PCB 1.0c allow powering the keyboard but If your PCB is 1.0b you will need to apply the following hack.

- Add a Schottky diode (like the BAT85) between the +5v via end the USB connector like shown here :



- Be careful not to overheat the via while soldering it.



- Do not use this port to power something else than a normal keyboard. The maximum current that can be provided is 300 ma.

Enjoy your new talking keyboard!

This works great with wireless keyboards too and allows triggering the speech from quite a distance.

How to add new vocabulary to Talko, the easy way

Previously, I had described here: how to do compress sound using a venerable Windows 3.1 tool: Qbox Pro. The process what quite long to set up and does not always produce good results.

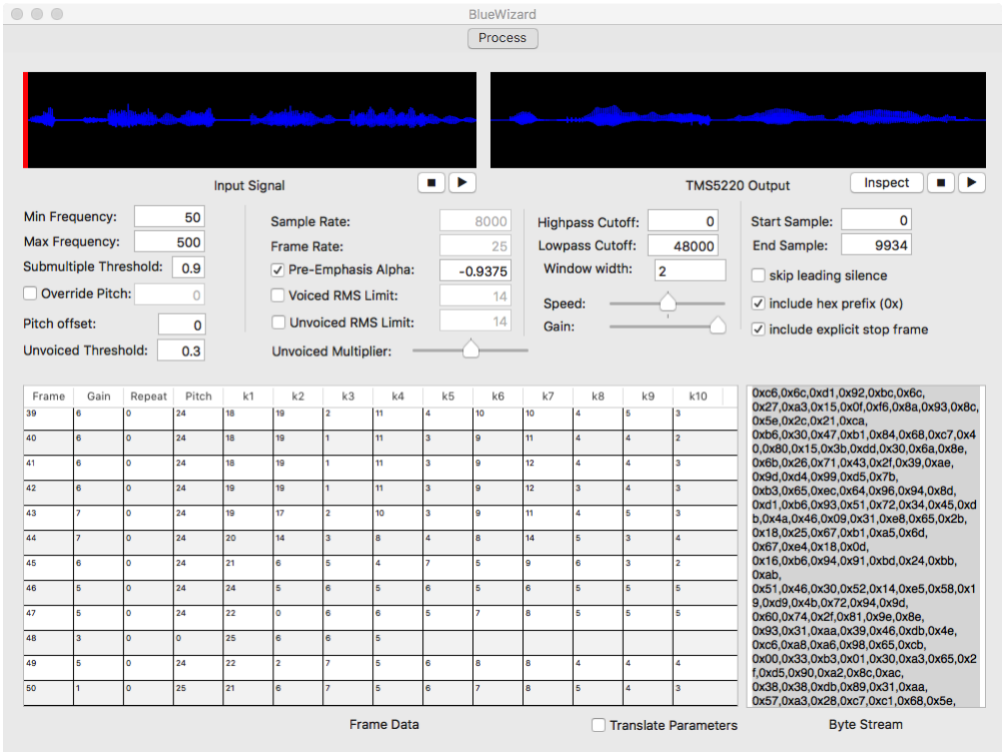
Today I discovered BlueWizard from this post.

BlueWizard runs on Mac and allows to tweak the process in real time to optimize the output! The author has been kind enough to make some small tweaking just for the Arduino and Talko!

Simply open your file (which has to be recorded at 8 kHz with 16-bit depth), click on the 2 tick boxes:
– “include hex prefix (0x)” to allow direct pasting into the Arduino IDE
(if you are using it for Emy’s SD card do not tick this box)

- and “include explicit stop frame” to avoid the library producing gibberish noise a the end of the sound

then copy the resulting the data from the “Byte Stream” windows.



Open the Arduino IDE and paste the data stream into your code before uploading it to Talko.

Let’s make a sound and process it:

```
say -v"alex" "We are charging our battery. And now we are full of energy. We are the robots." -r 100 -o roboter.wave
```

converting to 8 kHz with 16-bit depth using SoX

```
sox roboter.wave -r 8k -b16 roboter.wav
```

and the compressed version made with Talko :

the Arduino code:

```
// Talkie Adafruit library
// Copyright 2011 Peter Knight
// This code is released under GPLv2 license.

#include "talkie.h"

Talkie voice;
```

```
const uint8_t spROBOTS[]
={0xa6,0xd6,0x4a,0x67,0xd8,0xed,0xa8,0x9a,0x35,0x37,0xd5,0x8a,
0x1c,0x72,0xbf,0x84,0xcd,0x2a,0x4a,0xca,0x42,0x50,0x77,0xed,0x
6a,0x25,0xcb,0x1a,0xb3,0xa3,0xa3,0xa4,0x34,0x4b,0xb2,0xe9,0x0c
,0x9b,0xd2,0xc4,0xd9,0xa7,0xca,0x6c,0x49,0x8a,0x26,0x9d,0xaa,0
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0x5c,0x57,0x2a,0x78,0x94,0xce,0x12,0x43,0x0a,0x50,0x5e,0x51,0x
29,0x8c,0xa3,0xa6,0x10,0x6a,0xb2,0x04,0xcc,0xd1,0x5e,0x86,0x99
,0x94,0x59,0xbd,0x53,0x1a,0xab,0x61,0xf1,0xea,0x44,0x69,0xcc,0
x86,0x2c,0x36,0x23,0xa7,0x31,0x5b,0xd6,0xb8,0x88,0x55,0xc6,0xe
6,0x58,0x64,0x72,0x4e,0x19,0xbb,0x67,0x91,0xca,0xc5,0x65,0x1c,

```
0x81,0x45,0x22,0xe6,0xa4,0xb1,0x7b,0x66,0xa9,0x9c,0x92,0xa6,0x
ae,0x59,0xac,0xb3,0x76,0x9a,0xba,0x66,0xf6,0x89,0xc8,0x61,0xee
,0x96,0xd8,0x27,0x42,0x9b,0xb9,0x19,0xe4,0x18,0xb7,0xa2,0xe6,0
xa6,0x90,0x7d,0x23,0x8a,0x58,0xaa,0x25,0x96,0xd2,0xa8,0x00,0x0
0,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0xea,0x65,
0x21,0x3a,0xc9,0xc3,0xa8,0x9e,0xf9,0xe8,0x06,0x8f,0x6c,0x3a,0x
51,0xcc,0x55,0x7a,0x74,0x68,0xad,0xd7,0x4c,0xaf,0x22,0xa9,0x2b
,0x06,0xb5,0x3b,0xca,0x86,0xae,0x1a,0xd4,0xea,0x2a,0x1c,0xba,0
xac,0x51,0xab,0xa3,0x4c,0xe9,0xb2,0x12,0xe9,0x72,0xdb,0xad,0xa
b,0x8e,0xa5,0x23,0xa2,0xb4,0xb6,0x04,0x89,0xd4,0x0a,0x9b,0xda,
0x54,0xa5,0x3c,0xd2,0x58,0x6a,0xe2,0xd0,0x72,0xf5,0xb2,0xa9,0x
49,0x5d,0xab,0x45,0xc7,0x86,0x26,0x0f,0xee,0x61,0x1b,0x1a,0x9a
,0x34,0xa4,0x8b,0x6d,0x68,0x68,0xd2,0xe0,0x4e,0xf6,0xa1,0xa9,0
xc9,0x8d,0xda,0xd5,0xcb,0xa6,0x36,0x25,0x8e,0xf0,0x8c,0x5c,0xd
a,0xec,0x55,0xd2,0x33,0xb6,0x69,0x83,0x51,0xa9,0x28,0xcb,0xa9,
0x09,0x26,0xad,0xbc,0x8b,0xa4,0x36,0x3a,0xf7,0xb2,0x2a,0x13,0x
ba,0x10,0xb9,0x3c,0xa3,0x96,0xe9,0x7c,0xa6,0x8a,0xb4,0x46,0xa6
,0x33,0x49,0x2d,0x4a,0x5c,0xbb,0xce,0x14,0x33,0x2d,0x63,0x1b,0
x1a,0xdf,0xc4,0x22,0xcc,0x6d,0xa8,0xfc,0xa4,0x8c,0xb0,0xd4,0xa
5,0x0c,0x39,0x5d,0xc2,0x6a,0xb5,0x3c,0xa4,0x76,0x35,0x9f,0x53,
0xb2,0x10,0x26,0x54,0xfd,0x61,0xc9,0x82,0xdb,0x54,0xd5,0x87,0x
29,0xf7,0x71,0x43,0xc4,0x6f,0x86,0xc2,0x87,0x75,0x72,0x9f,0xa8
,0x1a,0x95,0xdb,0xc4,0x7c,0x32,0x19,0x69,0x2a,0x13,0xf5,0x38,0
xa9,0x0b,0xa1,0xd2,0x45,0xa7,0xa4,0x3e,0x94,0x56,0x77,0x1f,0x1
3,0xc6,0xd0,0x4b,0xc3,0xb3,0x4c,0x1a,0x63,0x1d,0x09,0x8f,0x32,
0x65,0x4a,0xa9,0x23,0x38,0xcb,0xa6,0x39,0xa5,0xf6,0x10,0xaf,0x
92,0xe6,0xd4,0x32,0x4c,0xdb,0x4a,0x59,0x52,0xce,0x48,0xe9,0xb0
,0x69,0xc9,0xd9,0xcb,0x74,0xa4,0xb9,0x25,0x45,0x2d,0xf3,0x14,0
xa3,0xd6,0x62,0xc3,0x5d,0xdd,0x34,0x59,0xba,0x74,0xcf,0x08,0x4
b,0x08,0x58,0xa9,0xc3,0x30,0xc3,0x65,0x84,0x7b,0x1c,0x0,0x0,0x
0,0xf0,0xff,0xff};

void setup() {
}
void loop() {

     voice.say(spROBOTS);
}
```

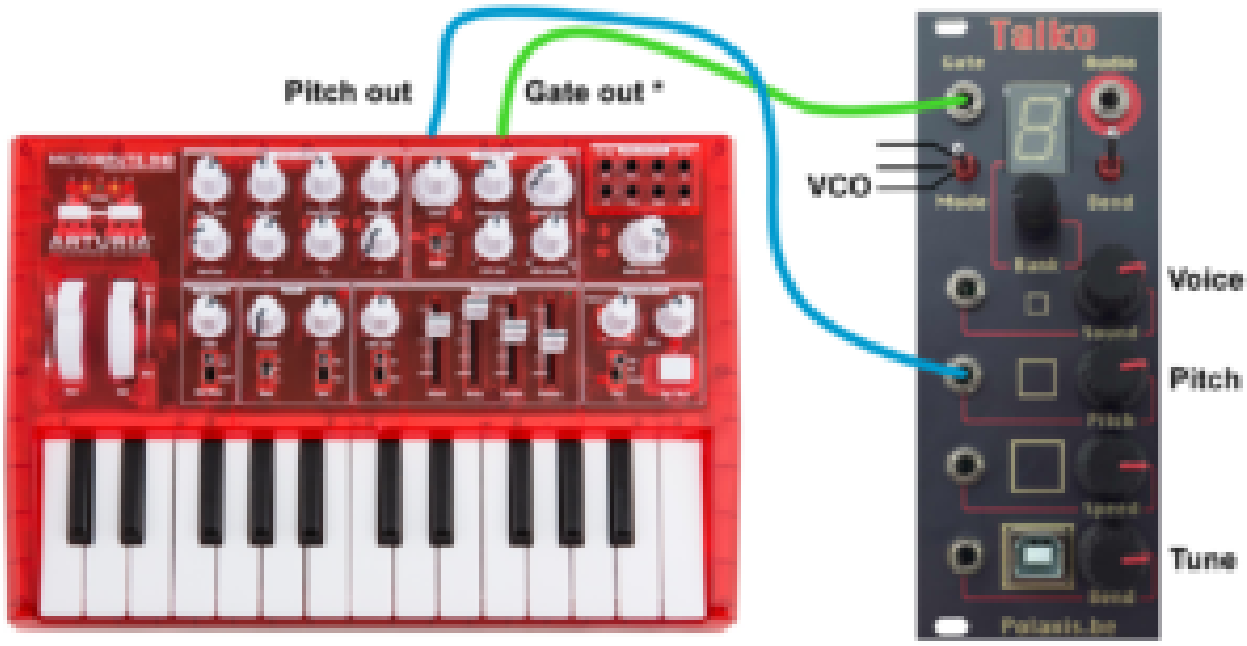
New Talko firmware : VCO mode can play semi-tones

The rev 2 of Talko's firmware can now play notes over 2 octaves.

It may seem obvious to have a 1V/octave CV to note in a VCO mode but this was quite challenging to achieve. (I may explain the process in another post as it could be also applied for another of my speech synths)

Connections

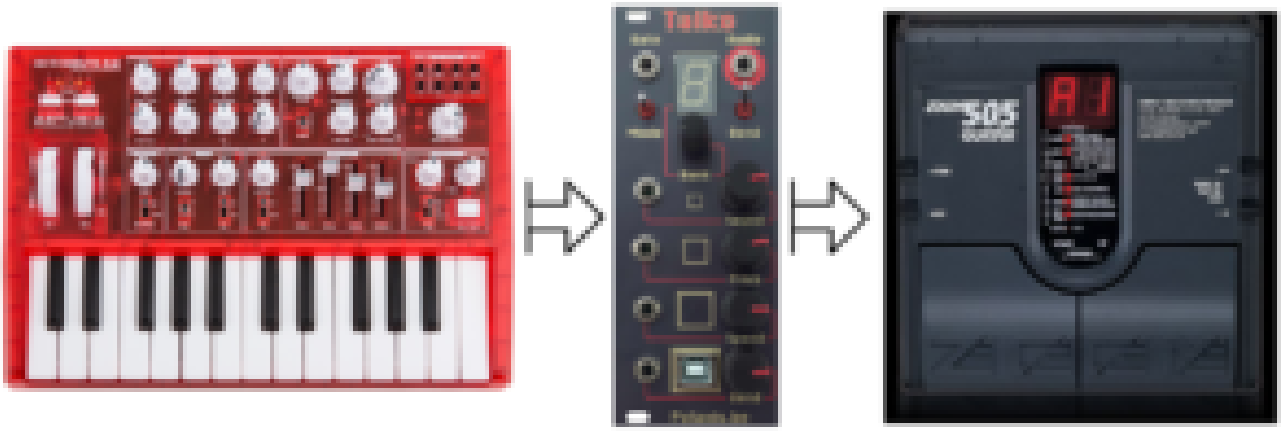
Quite easy: just feed a pitch signal into the Pitch entry. Tune the synth up and down with the Bend pot and trigger the note with the Gate.
Set it to Bank 16 and play with the Sound pot to choose among the 26 vowels sounds.



(*) Please note that the Microbrute’s gate out can’t trigger Talko directly (it’s a Microbrute know impedance issue): use a gate buffer in between.

Sounds

The VCO sound very much like an organ and it’s quite fun to pass the audio through a guitar pedal like the Zoom 505:



#Talko new firmware : the VCO mode can now play semi-tones ! #arturia keyboard driving #talko pitch cv in . I apologize for my poor keyboard skill

(^_^)

Une publication partagée par Jean-Luc Deladrière (@polaxis) le 24 Févr. 2017 à 14h04 PST

The Microbrute can also send notes via its sequencer: this allows instant fun for the poor keyboard player like me!

#talko in VCO mode with the #arturia #microbrute as sequencer

Une publication partagée par Jean-Luc Deladrière (@polaxis) le 24 Févr. 2017 à 13h26 PST

Firmware

The code is available here: Talko 1.2 rev2
Right click to save it as a .hex file and use Easy uploader to install it into Talko.

User Manual

The manual has been updated to reflect this revision : http://www.polaxis.be/wp-content/uploads/2016/05/Talko-Manua

l-1_2.pdf