Robovox

Have your Emy or Terminal sing like the Kraftwerk singing typewriter.

Robovox was inspired by the Patent "**System for and method of synthesizing singing in real-time**" filed on 03.05.90 by Florian Schneider, Gert Joachim Ott, and Gert Jalass.

It describes a musical instrument that can produce a speech and sing in real-time via MIDI controls.

At the heart of the instrument, lives a magical speech synthesizer chip: the Votrax SC-02 invented by Richard T. Gagnon.

The Votrax SC-02 chip can generate speech by stringing phonemes together. It is noteworthy that specifics phonemes for French and German can also be produced …

The Votrax SC-02 contains registers that allow software control of the speech rate, pitch, pitch movement rate, amplitude, articulation rate, vocal tract filter, and of course phoneme selection.

Most of these functions are implemented in the MIDI control software.

In Robovox, we also implemented an **undocumented function of the chip**: the internal audio carrier can be replaced by an external one to produce vocoder-like effects. The result is simply amazing. You can also use this feature as an effect to apply to the carrier!

Check this demo where I play with the pitch of the external carrier with a Genki ring (@ 0:48) (sorry for the bad audio -

video sync)

Specifications

Hardware

- Add-on board to fit on Emy or Terminal via the MikroBUS port
- Host the vintage SC-02 Votrax speech chip
- Audio carrier input for vocoder like effect

Midi controls

- MIDI note ON note OFF mapped to the SC02’s phonemes
- Velocity
- Pitch (coarse control by clocking the chip)
- CC2 Note Pitch (fine control using the chip inflection/pitch register)
- Mod Wheel mapped to filter
- CC 64 sustain ON/OFF to choose between the internal and external carrier

Firmwares

The code is designed to run on Terminal or on Emy. It comes in 2 versions, depending on how you want to sequence it. It can be driven either as a USB MIDI instrument or via a more classic MIDI serial TRS connector.

The code also allows CV controls so it can be used in a Eurorack setting

Robovox MIDI Serial

3 file(s) 44.86 KB
Download

Robovox MIDI USB

3 file(s) 45.93 KB
Download

Sequencing the chip

VST-Plugin

The chip is quite easy to sequence with the help of a plugin that works almost like the original Atari software used by Kraftwerk.

Robovox PEC VST plugin

2 file(s) 5.26 MB
Download

Ableton MIDI Effect Rack

You can also sequence the chip by sending phonemes from the piano roll (here
:UH R A N E U M)

I made a MIDI effect rack for Ableton to simplify the introduction of text

ADG

Ableton Robovox Rack

1 file(s) 11.32 KB
Download

Media

Here are a few Kraftwerk covers made by Andrew Shaw. These are amazing variants of the original ones: respectful to the original songs but with their own specificities or identities.

Andrew is using the Robovox exactly as it was used by Kraftwerk: first by finding the correct phonemes to be uttered, then launching them in perfect timing and duration, and then finally tuning the pitch to have the chip sing in tune ! (all parameters sent live to the Robovox from within the DAW)