

SSI 263 text to speech in Python via Nanpy on the Arduino

The almighty SSI-263 speech synthesizer chip

As you can read on the [Wikipedia page](#), the SSI-263 is the other name for the Votrax SC-02.

It is becoming quite difficult to find, much harder than its little brother the Votrax SC-01 but I finally got one by buying a Mockingboard B on Ebay.

The SSI-263 is TTL compatible and needs only very few components to be added. It is very easy to connect it to an Arduino but is much more complex than the Votrax-SC01 to program.

Nanpy

As I planned to make many software iterations and process the text to speech routine from Python, I decided to use [Nanpy](#) on the Arduino to « relay » the instructions to the chip. I guess I could also use [Firmata](#) to do the job as I am using really basic stuff like writing bytes on various pins.

Schematics

The SSI-263 datasheet is quite easy to find and so the [programming guide](#) via some Google search but the best one I found is [the Votrax SC-02 version](#) that has an extra page at the end with a nice and very simple schematic to get started with .

As I plan to build a shield for the Arduino, I started to draw this in Eagle too :

page is regularly updated and makes an excellent starting point.

Code

Here is the [Main code](#)

The text-to speech is performed via a lookup in the [CMU Dictionary](#) (The dictionary can be install with these instructions

: <http://stackoverflow.com/questions/11911028/python-arpabet-phonetic-transcription>)

It return an arpabet version of the text which is then translated into the Votrax allophone table.

(thank to this modified [Arpabet to unicode script](#))

The allophone chain is then sent to the chip

The code is very basic and doesn't use the SSI263 registers to their full potential : the voice generated is very robotic ... but I like it a lot

Soundcloud

Listen to the chip saying the Issac Assimov's 3 laws of robotics with 2 different voice settings :

Todo

Next thing I will try is to add prosody or even make it sing
On the hardware side I plan to add a RC filter with an amplifier and add a midi in to the circuit .. so stay tuned.