SPEECH SYNTHESIS ADDED TO PSK31

by Ed Sack, W3NRG

Radio Amateurs are well known for their keen interest in combining several technologies to provide new features for the hobby. One such combination is the use of computer speech synthesis to monitor PSK31 traffic. Thanks to the availability of an inexpensive speech synthesis program and freeware written by amateur N7YG it is now possible to listen to the text of a PSK31 stream rather than watching the text develop on the computer screen.

The first question one asks is "Why would you want to do this?" A few minutes "lurking" around 14.070mh USB with a PSK31 transceiver/computer setup shows the growing popularity of this mode of operation. Literally dozens of QSO's are underway in a tiny slice of 20 meter bandwidth because of the transmission efficiency of this mode. Further, most of these QSO's are taking place at power levels between 5 and 20 watts and with simple antennas that make possible amateur radio activity in situations where such would be otherwise impossible.

However, monitoring the PSK31 activity in the normal manner requires attention to the computer screen as the text is translated from the PSK31 "warble" by the computer sound card using one of the many computer programs developed for that purpose. A PSK31 "lurker" such as the author may want to be doing other things around the shack (or office) while keeping track of what is going on across the band. Using speech synthesis to translate the PSK31 text stream to audio solves that problem.

As a bit of background, Jeff Steinkamp, N7YG has written very fine software[1] for use by the BEACONet[2] community. His coder/decoder programs, BeaconServer1 and BeaconServer3 along with his BeaconMailer program are in use by many who participate in the BEACONet Project.

The author had been experimenting with an inexpensive commercial speech synthesis package called "CoolSpeech.[3]™" As it comes from the vendor, this program will read in one of several voices any computer text that you highlight followed by the "copy" command. The application works well with PSK31 traffic but has the inconvenience of requiring that the user stop whatever else he is doing from time to time to perform the highlight and copy functions at the computer keyboard.

The author contacted N7YG and asked if he could write a program to link the CoolSpeech program with his BS1 PSK31 decoder so as to provide hands-off continuous scanning and monitoring of band activity. Within no more than a day or so, Jeff had on his web site a revision of his program with just that feature built in. In addition, he provided a read file which offered suggestions as to how to use the program in several different computer configurations - one computer/one sound card, one computer/two sound cards or two computers linked by an Ethernet connection.

The newly revised software was downloaded and installed on a computer with a Windows 98, second edition operating system. However, the CoolSpeech program works with other Microsoft operating systems, as does Jeff's decoder software. I opted for the "one computer/one sound card" installation which is the "default" condition for the software.

Within minutes, I was listening to PSK31 QSO traffic on 14.070 mh. Jeff's BS1 program may be set to scan over the conventional PSK31 audio spectrum so if one signal goes away, the software automatically searches for another one. This provides the opportunity for truly "hands off" monitoring of what is going on across the band.

As with any other amateur application there are some things that you must get used to. If the PSK31 typist is slow, the speech will be slow. Also, the CoolSpeech algorithm has not been tailored to "ham lingo." On the other hand, just as one gets used to listening through the QRM in other modes, one soon learns to listen through the "artifacts" which occur in this application.

As a side benefit, the CoolSpeech application can be set to access "web news" at various times of the day. Market information, world news and news bulletins are "spoken" automatically again while the listener is busy doing other tasks.

For the author, who got interested in computer speech synthesis and recognition many years ago, and who is fascinated by the QRP applications of PSK31, this combination of technologies is "pure fun." Hopefully others will be equally motivated by this article to apply and enhance the application of speech synthesis in ham radio.

References:

[1]. http://home.earthlink.net/~n7yg/

[2]. "BEACONet" by Ev Tupis, W2EV, QST, May 2001, p 38

[3]. http://www.ByteCool.com