



Sub-Nyquist MWC Miniaturization

Supervisor: Shahar Tsiper

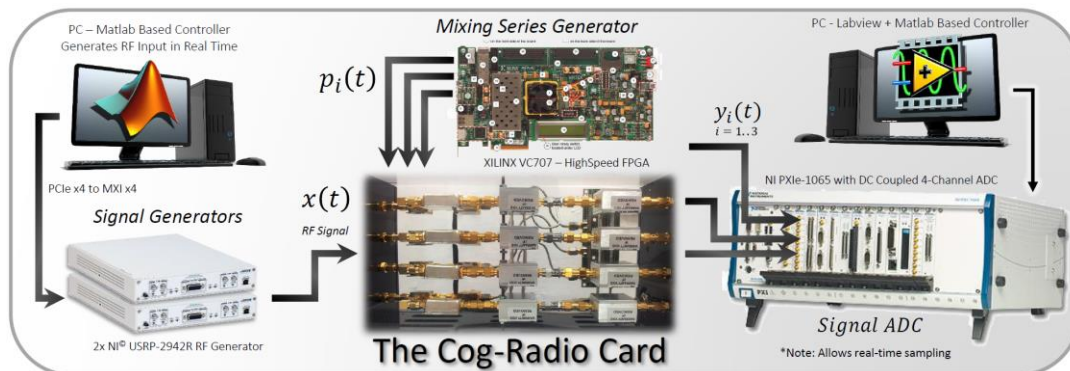
Project description:

In light of the ever-increasing demand for new spectral bands and the underutilization of those already allocated, **the new concept of Cognitive Radio (CR) has emerged**. Opportunistic users could exploit temporarily vacant bands after detecting the absence of activity of their owners. A CR deals with wideband signals, with high Nyquist rate. To overcome the sampling rate bottleneck, a **sub-Nyquist sampling and reconstruction prototype** has been developed in the SAMPL lab, the modulated wideband converter (MWC).

One of the major challenges today is the adaptation of the MWC research platform to real world devices, such as laptops, cellular phones and other personal communication devices. The goal of this project is to use cutting edge technologies in order to implement the MWC system on a small scale factor, effectively miniaturizing the system by first designing and then implementing unique engineering solutions.

The students will learn and use advanced signal processing tools from the world of sub-sampling, and will gain a lot of hands-on experience on both software and hardware development.

We are confident the tools acquired will be of great use to the students in the future, in whichever field they would like to specialize.



Required background: Signal and systems, Mavlas (can take during the project), **Logic Design and/or VHDL background**

Environment: Matlab, LabView

For further details, please contact Shahar: tsiper@technion.ac.il

