GNU Radio Short Introduction

Updated 3/11/2021

https://wiki.gnuradio.org/index.php/Tutorials

What is it?

GNURadio is Python/C++ algorithmic signal processing framework that allows developers to write complex signal processing applications using functional “blocks” provided by GNURadio, as well as by writing their own blocks. By combining these blocks together, users may write their own complex software defined radios.

What are these “blocks?”

Blocks in GNURadio are isolated “blocks” of functionality that perform some type of signal processing. GNURadio uses a flowgraph approach to signal processing, in which blocks are chained together to implement more complex functionality.

What are the different block types?

See block docs. There are three pages.

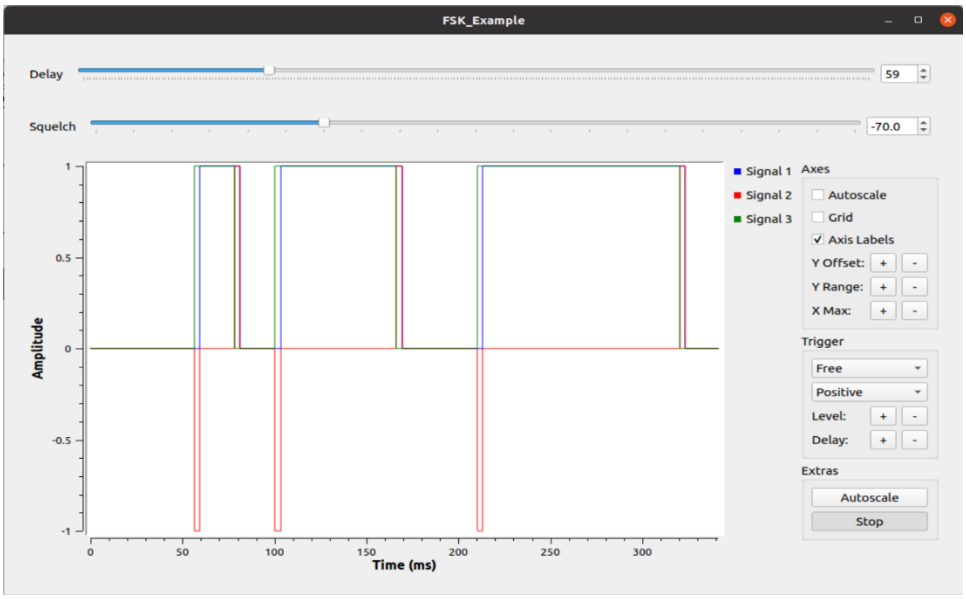
Additional Notes

GNURadio comes with PyQT (as well as QT, for C++) bindings for GUI sinks (which allow GUI rendering of signals). This makes it a good match with a PyQT application. PyQT is a free GPL3 Python library that provides bindings to QT libraries. The current Python Ground Station is written in TKInter. It is possible to integrate GNURadio into the TKInter Ground Station, but it’s worth considering whether beginning again from scratch with PyQT wouldn’t be both simpler and more effective long-term. PyQT looks to have many advantages over TKInter, one of which is much less code to implement similar UI.

Simulation Examples

Frequency Shift Keying

Example screenshot below, generated 3/10/21 on Ubuntu 20.04 VM



[AM transmitter and receiver]

Example screenshot below, generated 3/10/21 on Ubuntu 20.04 VM