Introduction to Pothos

Introduction via SDR examples

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February 2019

What is Pothos?

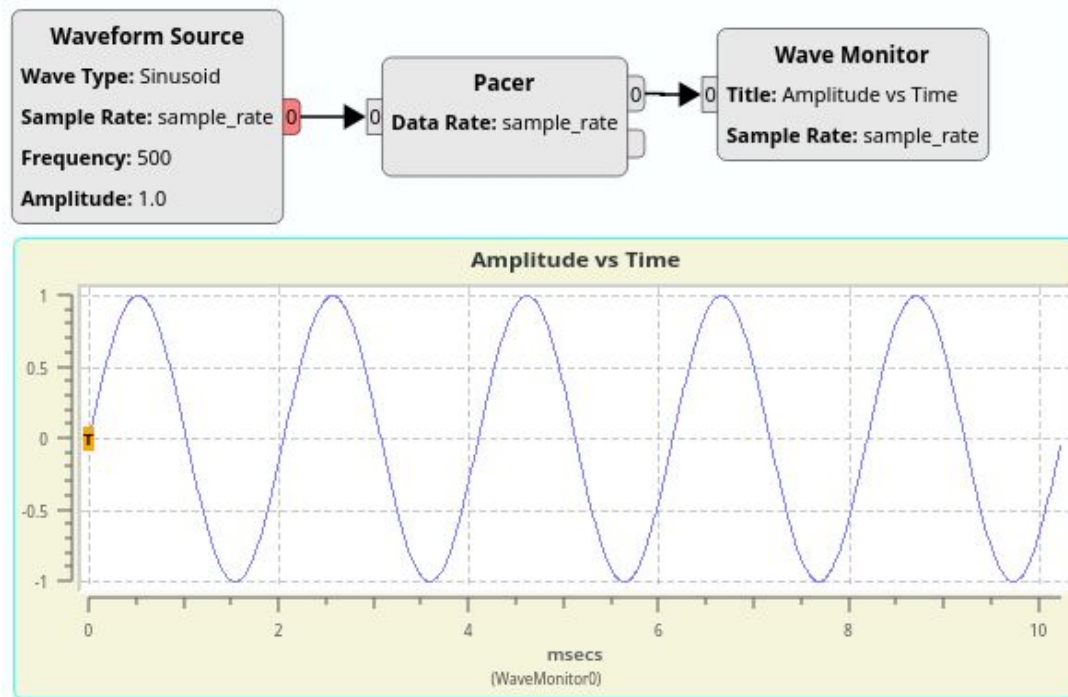Pothos is a data-flow software solution created by Josh Blum
PothosWare (http://www.pothosware.com/)   @pothosware

It features -
- ● **Processing of stream data (real and IQ)**
- ● **Processing of packet based data**
- ● **Topology can be dynamically reconfigured**
- ● **Event system with signals and slots**
- ● **Stream and packet meta labels**
- ● **Distributed processing**

Basic Topology

Basic Block Types

- **Sources (SDRs TX, Audio In, Simulated)**
- **Sinks (SDRs RX, Audio Out, Graphical plotters, Dummy sinks)**
- **Processing Blocks (Filtering, Modulation, Demodulation, Resampling, ...)**
- **Bellow is a sample of some of the available block categories**

Available Blocks
- ▸ Audio
- ▸ Convert
- ▸ Debug
- ▸ Demod
- ▸ Digital
- ▸ Event
- ▸ FFT
- ▸ File IO
- ▸ Filter
- ▸ Labels

- ▸ LiquidDSP
- ▸ LoRa
- ▸ MAC
- ▸ Math
- ▸ Media
- ▸ Misc
- ▸ Network
- ▸ Packet
- ▸ Plotters
- ▸ Random
- ▸ SDR

- ▸ Serialize
- ▸ Sinks
- ▸ Sources
- ▸ Stream
- ▸ Symbol
- ▸ Testers
- ▸ Utility
- ▸ Waveforms
- ▸ Widgets

Common Pothos blocks

- **Source**
  - Waveform Source - Simulated NCO
  - SDR Source - Radio Hardware
  - Audio Source - Sound Card
  - Binary File Source - Replay data from a file
- **Processing**
  - Freq Demod
- **Sinks**
  - Wave Monitor - GUI plotter
  - Spectrogram - GUI plotter
  - Audio Sink - Sound Card
  - SDR Sink - Radio Hardware
  - Binary File Sink - Save data to a file

Additional Pothos Blocks

To expand on the base functionality in Pothos additional libraries are available, such as -

- **LiquidDSP - signal processing library including blocks for**
  - Modulation
  - Demodulation
  - FEC - forward error correction
  - LMSE - Least mean square estimator
  - Many other wonderful goodies
- **LORA**
- **PothosGStreamer - library with blocks to input or output to GStreamer**

*See References slide for links to the above libraries

Tips and tricks - Live demonstrations

- **Testing LNBs**
  - **Testing if functional**
  - **Determining frequency**
- **Checking for RF overload in SDR**
  - **Determining limitations of SDR Frontend**
  - **Setting correct TX and RX gain**
- **Using the PothosGStreamer library**
  - **Written by Ashley for the Pothos comunity**

Please stand by for the

Live Demonstration !!

Loading

Question time

Ask now or interogate us after the talk over beer

(Ash drinks nice craft beer, Chris is fine with a lemonade)

Resources

- Pothosware http://www.pothosware.com/
- Liquid DSP https://github.com/pothosware/PothosLiquidDSP
- LoRa Block https://github.com/myriadrf/LoRa-SDR
- GStreamer Block https://github.com/ashley-b/PothosGStreamer
- This slide https://github.com/ashley-b/Cyberspectrum-intro-to-pothos

Where to find us

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