Sound, GSL, GNUPLOT, C920 Camera with OpenCV,
Myhdl ,GTKWave compiled, GCC, Python
switches, 8 Leds, oled display GNURADI0 on ZedBoard
12/01/15

Testing on a remote shell running on Ubuntu 12.04.
On power up.
The Green led in the upper left is the power on.   The Green led blinks to right oled display. The blue
to left of the oled display comes on a few seconds later.   On the HDMI display Please wait: booting …
is displayed. Before the the HDMI display goes to SATO display the oled display turns on displaying
the TOPIC logo.
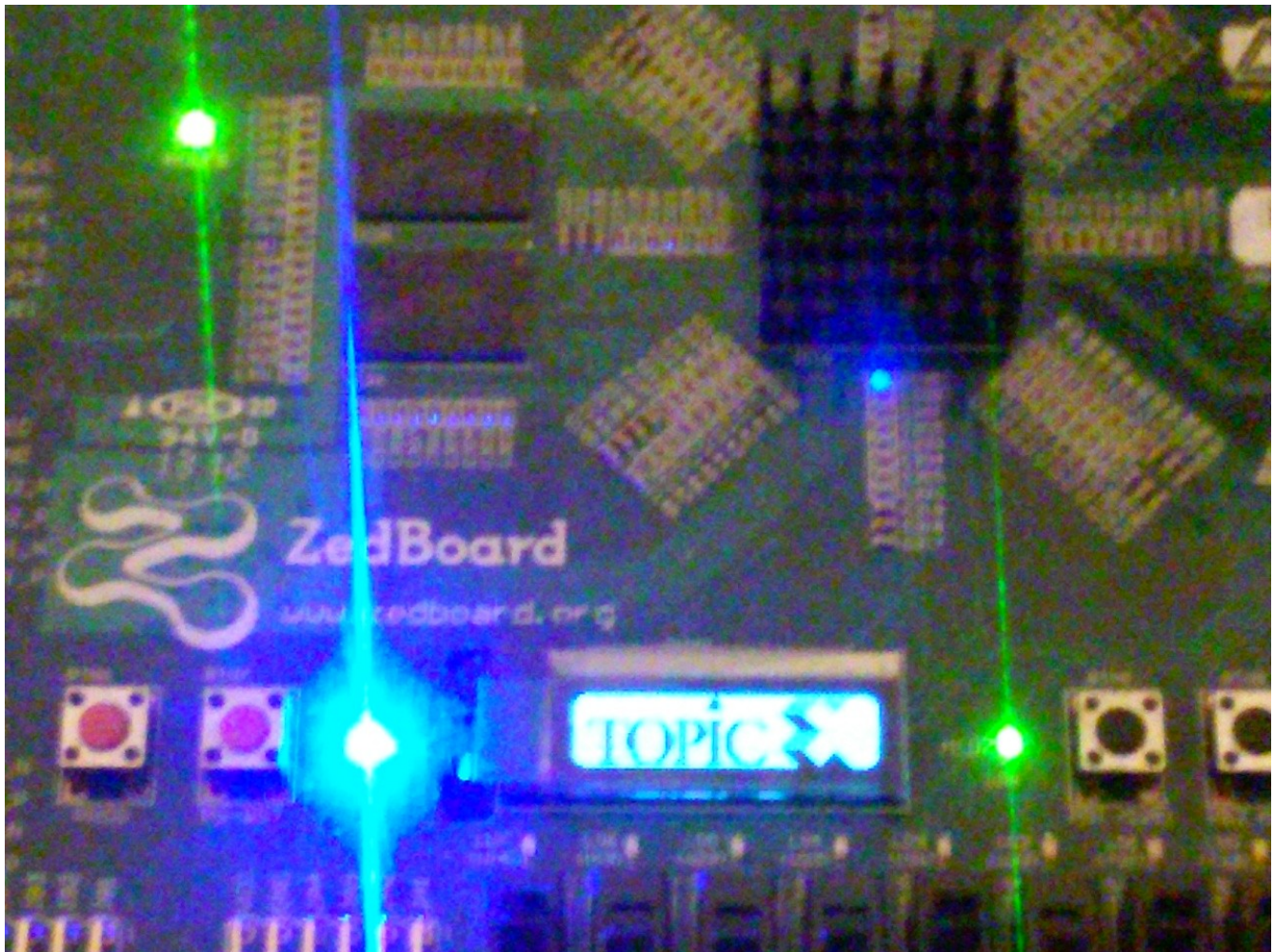
ls /sys/class/gpio/
export gpiochip0 unexport

~/sw_export
#!/bin/sh

echo "Starting rcS..."

```
#echo "++ Starting OLED Display"
#load_oled

echo "++ Exporting LEDs & SWs"
for i in 0 1 2 3 4 5 6 7;
do
    sw=$(($i+65));
    echo $sw > /sys/class/gpio/export;
done;

ls /sys/class/gpio/
export  gpio66 gpio68 gpio70 gpio72    unexport
gpio65 gpio67 gpio69 gpio71 gpiochip0

read_sw

#!/bin/sh
value=0;
for i in 0 1 2 3 4 5 6 7;
do
    sw=$((72-$i));
    sw_tmp=`cat /sys/class/gpio/gpio$sw/value`;
    value=$(($value*2));
    value=$(($value+$sw_tmp));
done;
printf "0x%x %d\n" $value $value;
```

With switches up dn dn dn up dn up up

```
./read_sw
0x8b 139
```

With switches up dn dn dn dn dn up up
```
./read_sw
0x83 131
```

cd display_logos

./unload_oled The oled turns off

cp logo.bin.tmp logo.bin Digilent logo is copied to logo.bin file

./load_oled
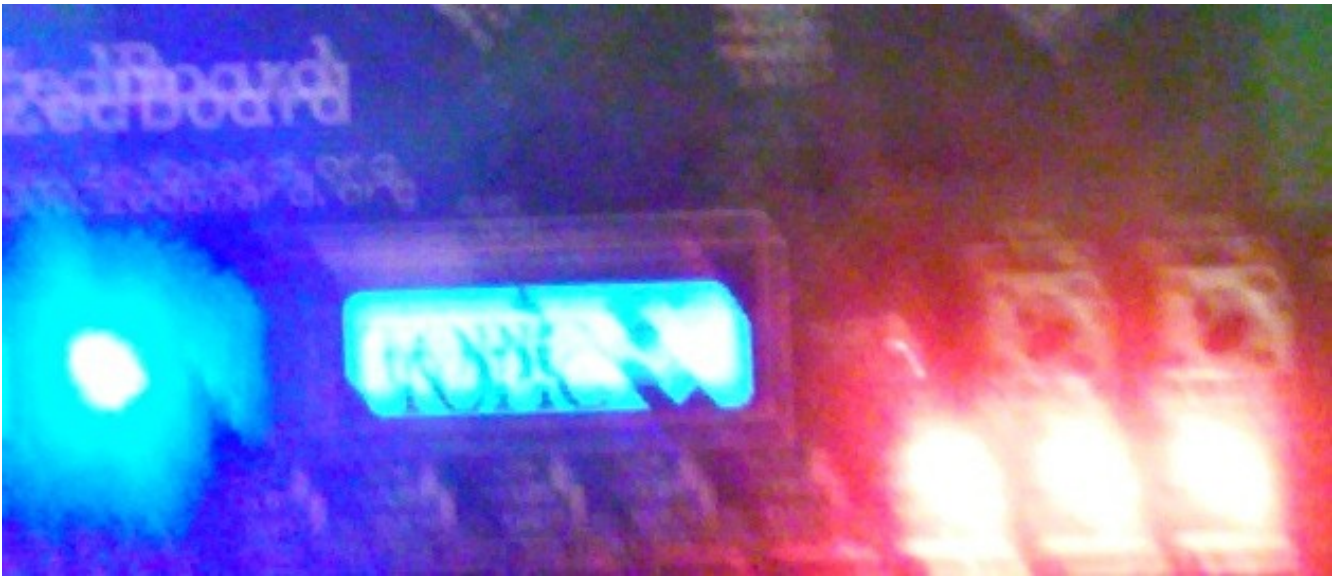
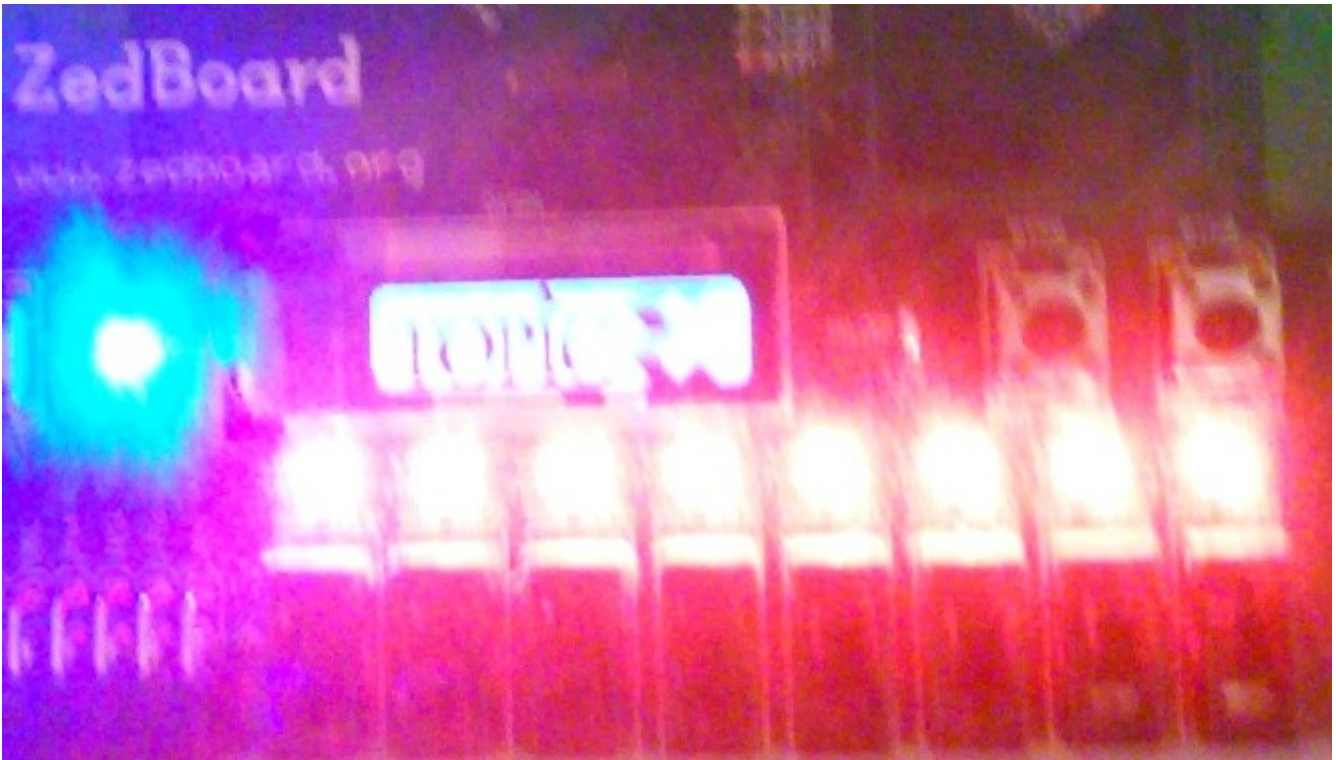./unload_oled The oled turns off

cp topic_logo.bin.tmp logo.bin

./load_oled

First three Leds on.

 All eight Leds On

The file below wil turn on the Leds starting on the left
```
#!/bin/bash
echo 1 > /sys/class/leds/ld7\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld6\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld5\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld5\:red/brightness
```

```
sleep 1
echo 1 > /sys/class/leds/ld4\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld3\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld2\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld1\:red/brightness
sleep 1
echo 1 > /sys/class/leds/ld0\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld7\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld6\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld5\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld5\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld4\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld3\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld2\:red/brightness
echo 0 > /sys/class/leds/ld1\:red/brightness
sleep 1
echo 0 > /sys/class/leds/ld0\:red/brightness
sleep 1
```

Speakers are connected to black jack and sound is heard correctly.
```
aplay speech_dft.wav
Playing WAVE 'speech_dft.wav' : Signed 16 bit Little Endian, Rate 22050 Hz, Mono
```

```
ssh -Y 192.168.1.143
uname -a
Linux zedboard 3.12.0 #1 SMP PREEMPT Sat Mar 29 13:42:20 MDT 2014 armv7l GNU/Linux
```

```
rpm -qa | sort > zedbrd_pkgs.txt
```

```
cd gsl/
```

```
. ./setpath
#!/bin/bash
export CFLAGS="-I/usr/include -L/usr/lib -lgsl -lgslcblas -lm"
```

```
./compile_test_files
#!/bin/bash
gcc ${CFLAGS} sqmatrice.c -o sqmatice
gcc ${CFLAGS} linalg.c -o linalg
```

```
gcc ${CFLAGS} poly.c -o poly
gcc ${CFLAGS} testmatrices.c -o testmatrices
./linalg
x =
-4.05205
-12.6056
1.66091
8.69377
root@zedboard:~/gsl# ./poly
z0 = -0.809016994374947673 +0.587785252292473359
z1 = -0.809016994374947673 -0.587785252292473359
z2 = +0.309016994374947507 +0.951056516295152976
z3 = +0.309016994374947507 -0.951056516295152976
z4 = +0.999999999999999889 +0.000000000000000000
root@zedboard:~/gsl# ./testmatrices
m(0,0) = 0.23
m(0,1) = 1.23
m(0,2) = 2.23
m(1,0) = 100.23
m(1,1) = 101.23
m(1,2) = 102.23
m(2,0) = 200.23
m(2,1) = 201.23
m(2,2) = 202.23
m(3,0) = 300.23
m(3,1) = 301.23
m(3,2) = 302.23
m(4,0) = 400.23
m(4,1) = 401.23
m(4,2) = 402.23
m(5,0) = 500.23
m(5,1) = 501.23
m(5,2) = 502.23
m(6,0) = 600.23
m(6,1) = 601.23
m(6,2) = 602.23
m(7,0) = 700.23
m(7,1) = 701.23
m(7,2) = 702.23
m(8,0) = 800.23
m(8,1) = 801.23
m(8,2) = 802.23
m(9,0) = 900.23
m(9,1) = 901.23
m(9,2) = 902.23
gsl: ../gsl/gsl_matrix_double.h:275: ERROR: first index out of range
Default GSL error handler invoked.
Aborted
root@zedboard:~/gsl# ./sqmatice
```

The output file format ofmt %f
will be used in gsl_matrix_fprintf (opointer, m, ofmt)
Initial test matrice
m(0,0) = 2.58
m(0,1) = -3.1
m(0,2) = 4.25
m(1,0) = 3.821
m(1,1) = 4.44
m(1,2) = 5.656
m(2,0) = 1.82
m(2,1) = 7.41
m(2,2) = 3.33
transpose of initial matrice
the matrice needs to be square
3
sizeof of struct m 24
num of rows 3
num of cols 3
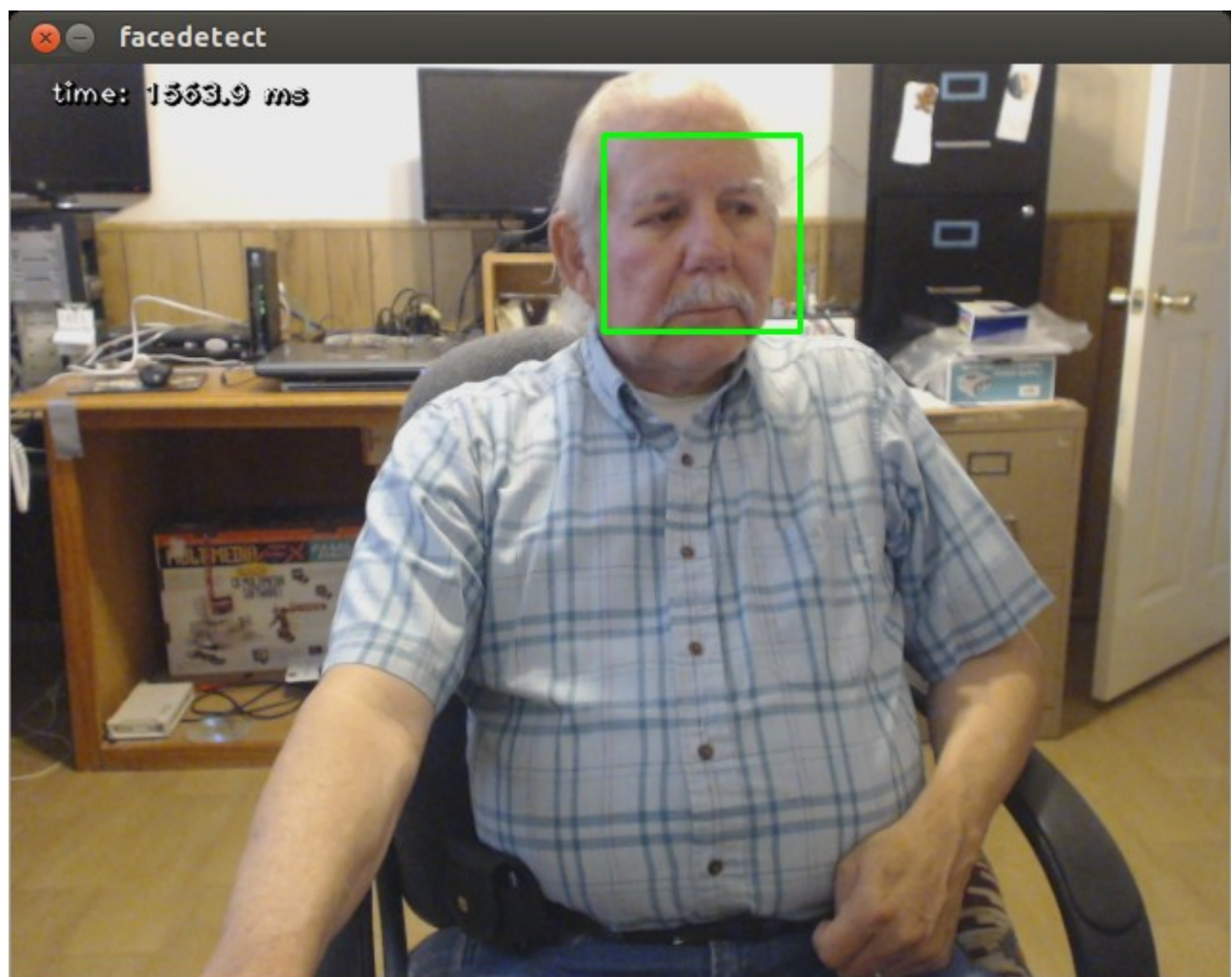m(0,0) = 2.58
m(0,1) = 3.821
m(0,2) = 1.82
m(1,0) = -3.1
m(1,1) = 4.44
m(1,2) = 7.41
m(2,0) = 4.25
m(2,1) = 5.656
m(2,2) = 3.33
The identity matrice
m(0,0) = 1
m(0,1) = 0
m(0,2) = 0
m(1,0) = 0
m(1,1) = 1
m(1,2) = 0
m(2,0) = 0
m(2,1) = 0
m(2,2) = 1

cd opencv_python_yocto_raspberry_pi/

python facedetect_my.py The image below was taken with RaspberryPi2B and C920 camera. Results
are the same on ZedBoard.

GTKwave compiled on target.

tar xfz gtkwave-3.3.66.tar.gz

cd gtkwave-3.3.66

./configure –disable-tcl

make

make install

cd ../

gtkwave tb.vcd

Myhdl

cd myhdl/

python setup.py install

python test_rs232.py
testCharacterize (__main__.rs232Characterize)
Find min/max tx baud rate tolerance by simulation ... Max tx baudrate: 10160
Min tx baudrate: 9095
ok
testDefault (__main__.rs232Test)
Check default case ... ok
testOddParity (__main__.rs232Test)
Check odd parity ... ok
testParityError (__main__.rs232Test)
Expect a parity error ... ok
testSevenBitsEvenParity (__main__.rs232Test)
Check 7 bits with even parity ... ok

Ran 5 tests in 19.002s

OK

Using the repository jpeg-2000-test

cd jpeg-2000-test/ipython_fixbv/test_lifting_jpeg_step

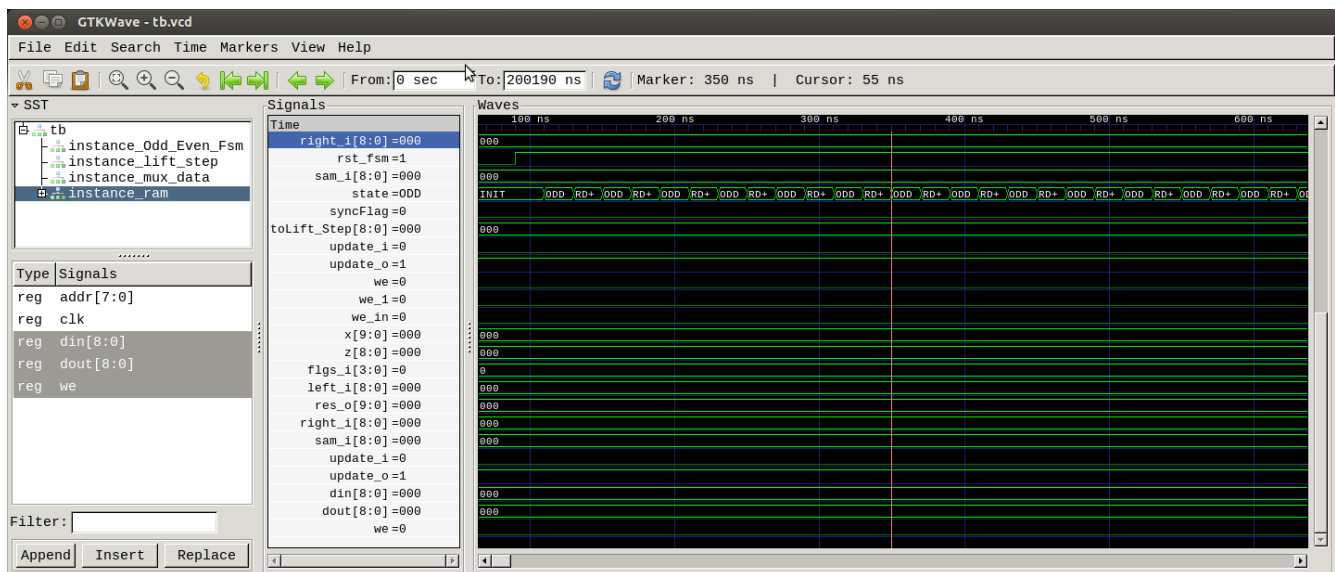 python odd_even_fsm.py
190 muxsel_i 0 rst_fsm 1
200190
root@zedboard:~/jpeg-2000-test/ipython_fixbv/test_lifting_jpeg_step# gtkwave tb.vcd
Gtk-Message: Failed to load module "canberra-gtk-module"

GTKWave Analyzer v3.3.66 (w)1999-2015 BSI

[0] start time.
[200190] end time.

Running gnuplot from xterm

plot1 of demo

GNURADIO

File Edit View Build Help
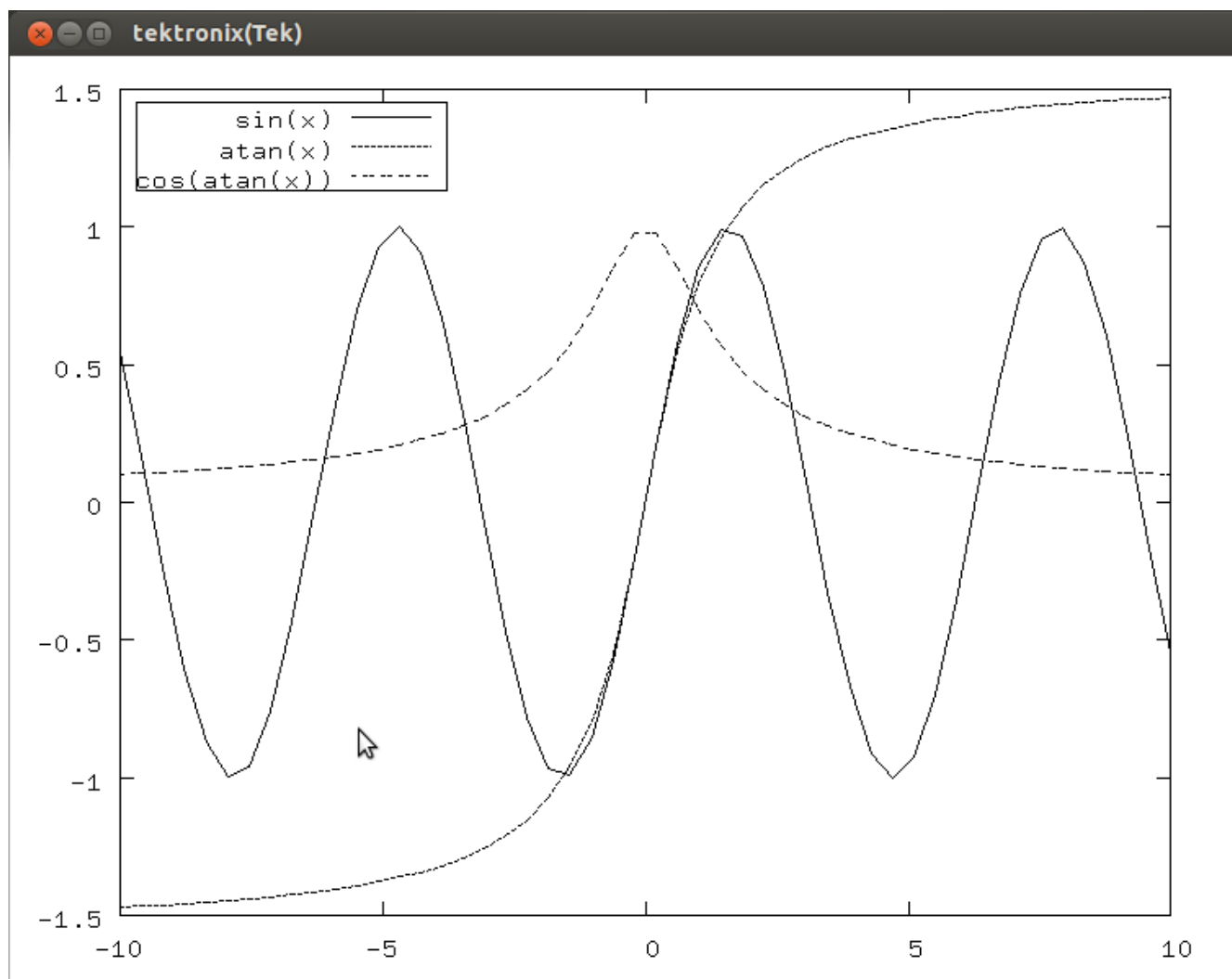
Options
ID: fm_receiver
Title: Lesson 3 - FM Rx
Author: John Ma...us Research
Description: Worki...he USRP!
Generate Options: WX GUI

Variable
ID: samp_rate
Value: 4M

Variable
ID: audio_samp_rate
Value: 96k

Variable
ID: lpf_decim
Value: 20

UHD: USRP Source
Samp Rate (Sps): 4M
Ch0: Center Freq (Hz): freq
Ch0: Gain (dB): rx_gain
Ch0: Antenna: TX/RX

Low Pass Filter
Decimation: 20
Gain: 1
Sample Rate: 4M
Cutoff Freq: 100k
Transition Width: 10k
Window: Hamming
Beta: 6.76

WBFM Receive
Quadrature Rate: 200k
Audio Decimation: 1

Rational Resampler
Decimation: 200
Interpolation: 96
Taps:
Fractional BW: 0

Audio Sink
Sample Rate: 96k

Wav File Sink
File: fm_record.wav
Sample Rate: 96k
Bits per Sample: 8

Variable
ID: variable_0
Value: 0

Blocks
▷ [Level Controls]
▷ [Modulators]
▷ [Sources]
▷ [Synchronizers]
▷ [Probes]
▷ [Sinks]
▷ [Message Tools]
▷ [Operators]
▷ [Type Conversions]
▷ [Stream Conversions]
▷ [Misc Conversions]
▷ [Filters]
▷ [Error Correction]
▷ [Line Coding]
▷ [Variables]
▷ [Misc]
▷ [Sources (New)]
▷ [Sinks (New)]
▷ [Math Operations (New)]
▷ [Boolean Operations (New)]
▷ [Stream Type Conversions (
▷ [Stream Operations (New)]
▷ [Misc (New)]
▷ [Digital]
▷ [Digital Modulators]
▷ [OFDM]
▷ [FFT]
▷ [UHD]
▷ [Vocoders]
▷ [NOAA]
▷ [Pager]
▷ [QT GUI Widgets]

```
>>> Error: Block key "wxgui_fftsink2" not found in Platform - grc(GNU Radio Companion)
>>> Error: Block key "notebook" not found in Platform - grc(GNU Radio Companion)
>>> Error: Block key "variable_text_box" not found in Platform - grc(GNU Radio Companion)
>>> Error: Block key "variable_slider" not found in Platform - grc(GNU Radio Companion)
>>> Error: Connection between blks2_wfm_rcv_0(0) and wxgui_fftsink2_1(0) could not be made.
        sink block id "wxgui_fftsink2_1" not in block ids
>>> Error: Connection between uhd_usrp_source_0(0) and wxgui_fftsink2_0(0) could not be made.
        sink block id "wxgui_fftsink2_0" not in block ids
>>> Done

Showing: "/home/root/gnuradio/fm_example.grc"
```

Add