Texas A&M University

ECEN-719 Lab5 Report

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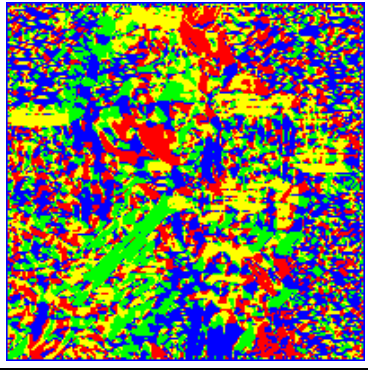UID: 433004106

Section: 602

Department of Electrical & Computer Engineering

1. Screenshots of the output images with analysis

Just the same as last lab

OutputOrigin	*OutputGauss*
OutputGradient	*OutputAngle*
OutputNMS	*OutputThres*

2. Screenshots of the simulation output in Vista

```
Built September 15, 2011. License version 2011.9.
Copyright (c) 2005-2011, Mentor Graphics Corporation.

            SystemC 2.2.0 --- Sep 15 2011 00:24:25
        Copyright (c) 1996-2006 by all Contributors
                    ALL RIGHTS RESERVED
> SUCCESS: The file was read successfully.

 ----- BMP HEADER -----
> MAGIC NUMBER : BM
> FILE SIZE : 120056 bytes
> OFFSET OF BMP DATA : 0x36

 ----- DIB HEADER -----
> NUMBER OF DIB HEADER : 0d40 bytes
> WIDTH : 200 Pixels
> HEIGHT : 200 Pixels
> COLOR PLANE : 1 Plane
> BITS/PIXEL : 24 bpp
> COMPRESSION : 0
> SIZE OF DATA : 120400 bytes
> H-RESOLUTION : 2834 Pixels/Meter
> V-RESOLUTION : 2834 Pixels/Meter
> NUMBER OF PALETTE :  0
> IMPORTANCE : 0

 ----- BMP DATA -----
> Create memX[][] Array
> Create memY[][] Array
WARNING: Default time step is used for VCD tracing.
>> OUT: INPUT >>
>> OUT: ORIGIN >>
>> OUT: GAUSSIAN >>
>> OUT: GRADIENT >>
>> OUT: ANGLE >>
>> OUT: NMS >>
>> OUT: HYSTERESIS >>
> 0th Matching Ratio : 100percent
> 1th Matching Ratio : 100percent
> 2th Matching Ratio : 100percent
> 3th Matching Ratio : 100percent
> 4th Matching Ratio : 100percent
> 5th Matching Ratio : 99.9936percent
```

3. *Screenshots of your code in this design with reasonable comments*

Canny edge wrap

```cpp
2  // Function : Canny_Edge_WRAP.cpp
3  //=============================================
4  #include "Canny_Edge_WRAP.h"
5
6  void Canny_Edge_WRAP :: Bus_Control() {
7      uint bControl = ControlBus.read().to_uint();
8      uint data = OutDataFromCanny.read().to_uint();
9
10     if(IntEnable){
11         ControlBus.write(0);
12     }
13     else {
14         ControlBus.write("Z");
15     }
16     #if defined (_DEBUG_)
17         cout << "@" << sc_time_stamp() << " >> ControlBus: " << bControl << endl;
18     #endif
19     }
20
21     void  Canny_Edge_WRAP :: Function_Canny_Edge_WRAP() {
22         AddrDecoded = AddressBus.read().to_uint() >> 28;
23
24     // Signal Parcing
25     bool    Canny_bWE = AddressBus.read()[1].to_bool();
26     bool    Canny_bCE = AddressBus.read()[0].to_bool();
27
28     // Decode other signals from the control bus.
29     bool    Canny_bOpEnable = AddressBus.read()[27].to_bool();
30
31     if(!bReset.read()){
32         IntEnable = 0;
33         Breq.write(0);
34     }
35     else if(IntEnable){
36         if(AddrDecoded == 0x4) {// Address Decoding Matching
37             // Insert your code here
38             // Enabled, assign decoded signals to the ports
39             // for AddrRegRow, AddrRegCol, bWE, bCE, OPMode, bOPEnable, dReadReg, dWriteReg
40                 // Bit [24 - 26 is OPMode
41                 OPMode.write(AddressBus.read().range(27,24).to_uint());
42                 // Bit [20 - 23] is dWriteReg
43                 dWriteReg.write(AddressBus.read().range(24,20).to_uint());
44                 // Bit [16 - 19] is dReadReg
45                 dReadReg.write(AddressBus.read().range(20,16).to_uint());
46                 // Bit [5 - 7] is AddrRegRow
47                 AddrRegRow.write(AddressBus.read().range(8,5).to_uint());
48             // Bit [2 - 4] is AddrRegCol
49                 AddrRegCol.write(AddressBus.read().range(5,2).to_uint());
50                 bOPEnable.write(Canny_bOpEnable);
```

```cpp
            bWE.write(Canny_bWE);
            bCE.write(Canny_bCE);

        if(!Canny_bCE && !Canny_bWE){
           InDataToCanny.write(DataBus.read());
           DataBus.write("ZZZZZZZZ");
        }
        else if(!Canny_bCE && Canny_bWE){
           DataBus.write(OutDataFromCanny.read());
        }
        else {
           DataBus.write("ZZZZZZZZ");
        }
     }
     else {
        IntEnable = 0;
        Breq.write(0);
        DataBus.write("ZZZZZZZZ");
     }
  }
  else {   // !IntEnable
     if(Bgnt) {
        IntEnable = 1;
        Breq.write(0);
     }
     else if(AddrDecoded == 0x4){
        IntEnable = 0;
        Breq.write(1);
     }
     else {
        IntEnable = 0;
        Breq.write(0);
     }
  }

  #if defined (_DEBUG_)
     cout << "@" << sc_time_stamp() << " >> IntEnable: " << IntEnable << endl;
  #endif
}
```