

2023 Digital IC Design Homework 5

NAME	莫寶琳		
Student ID	F64081169		
Simulation Result			
Functional simulation	Completed	Gate-level simulation	Completed
<pre>VSI2> run -all ***** # ***** Simulation Start ***** # ***** # ***** Simulation completed successfully! ***** # ** # ** Note: \$finish : C:/Users/user/Desktop/hw5/testfixture.v(145) # Time: 4587540 ns Iteration: 1 Instance: /testfixture # 1 # Break in Module testfixture at C:/Users/user/Desktop/hw5/testfixture.v line 145</pre>		<pre># Loading timing data from C:/Users/user/Desktop/hw/demosaic_v.sdc # Loading timing data from demosaic_min_1200mv_40c_v.fast.sdc # ** Note: (vsim-3587) SDF Backannotation Successfully Completed. # Time: 0 ps Iteration: 0 Instance: /testfixture File: C:/Users/user/ # Compile of testfixture.v was successful. # 5 compiles, 0 failed with no errors. VSI22> run -all # ** Warning: (vsim-7) Failed to open readmem file "./mosaic/test5.dat" in # No such file or directory. (errno = ENOENT) : C:/Users/user/Desktop/h # Time: 0 ps Iteration: 0 Instance: /testfixture # ***** Simulation Start ***** # ***** # ***** Simulation completed successfully! ***** # ** # ** Note: \$finish : C:/Users/user/Desktop/hw/testfixture.v(145) # Time: 4587540 ns Iteration: 1 Instance: /testfixture # 1</pre>	
Evaluation Results			
test1.png	25.29	test2.png	24.78
test3.png	29.13	test4.png	21.0
test5.png	21.98	test6.png	25.27
Description of your design			
<p>我的 FSM 設計有四個 state，分別為 IDLE,READ,BILINEAR,FINISH。</p> <p>IDLE state: 等待 in_en signal，讀到進入 READ state。</p> <p>READ state : read input pattern 時存入各自的 r,g,b memory。</p> <p>BILINEAR state:</p> <p>讀完全部 pattern 後進入 bilinear state，處理以下四個 case。</p> <p>(a) ex: center = 129，b(129) = [b(128)+b(130)] >> 1，r(129) = [r(1) + r(257)] >> 1</p> <p>(b) ex: center = 130，g(130) = [g(129)+g(131)+g(2)+g(258)] >>2，r(130) = [r(1)+r(3)+r(257)+r(259)] >>2</p> <p>(c) ex: center = 257，g(257) = [g(256)+g(258)+g(129)+g(385)] >>2，b(257) = [b(128)+b(130)+b(384)+b(386)] >>2</p> <p>(d) ex: center = 258，b(258) = [b(130)+b(386)] >> 1，r(258) = [r(257) + r(259)] >> 1</p> <p>FINISH state: 程式完成 done set high。</p>			

Scoring = average PSNR of the six test images

*** PSNR of all interpolation results should meet at least the baseline.**