Họ và tên: Nguyễn Duyên Chiến

Lớp: 61Th2

Chuyên đề buổi 2

Ma trận 07:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

Bài 1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

Xác định vùng giao với ảnh tại vị trí (1,1)

|  |  |  |
| --- | --- | --- |
| 0 | 0 | 0 |
| 0 | 3 | 4 |
| 0 | 1 | 3 |

Xác định giá trị của các điểm ảnh sau khi lọc trung bình alpha

Sắp xếp theo thứ tự tăng dần:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 4 |

Vì d =2 nên ta cắt đi 2 điểm ảnh có mức xám cao nhất và mức xám thấp nhất:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 0 | 0 | 1 | 3 | 3 |

I(1,1)=1

I(1,2)=2

I(1,3)=2,429 ≈ 2

I(1,4)=2,14 ≈ 2

I(1,5)=0,857 ≈ 1

I(2,1)=2,571≈ 3

I(2,2)=

I(2,3)=4,571≈ 5

I(2,4)=4,1428≈ 4

I(2,5)=2,714≈ 3

I(3,1)=3

I(3,2)=4,1428≈ 4

I(3,3)=4,428≈ 4

I(3,4)=4,1428≈ 4

I(3,5)=3,1428≈ 3

I(4,1)=3,1428≈ 3

I(4,2)=3,857≈ 4

I(4,3)=3

I(4,4)=2,714≈ 3

I(4,5)=2

I(5,1)=1,1428≈ 1

I(5,2)=1,714≈ 2

I(5,3)=1,285≈ 1

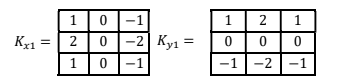
I(5,4)=1

I(5,5)=0,428 ≈ 0

Ma trận ảnh sau khi lọc trung bình cắt alpha là:

BÀI 2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

****

+Xác định đường biên theo hướng x:

Gx(1,1)=(-2x4-1x3)=

Gx(1,2)=(3x2-2x6+1x1-1x3)=

Gx(1,3)=(4x2-2x1-1x7+3x1)=

Gx(1,4)=(6x2-2x2-1x3+3x1)=

Gx(1,5)=(1x2+1x7)=

Gx(2,1)=(-1x4-2x3-1x7)=

Gx(2,2)=(1x3+2x1+1x7-1x6-2x3-1x2)=

Gx(2,3)=(1x4+2x3+7x1-1x1-2x7-1x7)=

Gx(2,4)=(1x6+2x3+1x2-1x2-2x3-1x6)=

Gx(2,5)=(1x1+7x2+7x1)=

Gx(3,1)=(-1x3-2x7-1x3)=

Gx(3,2)=(1x1+2x7+1x7-1x3-2x2-1x3)=

Gx(3,3)=(1x3+2x7+1x3-1x7-2x7-1x5)=

Gx(3,4)=(1x3+2x2+3x1-1x3-2x6-1x1)=

Gx(3,5)=(1x7+2x7+1x5)=

Gx(4,1)=(7x-1+3x-2+1x-1)=

Gx(4,2)=(7x1+7x2+4x1+2x-1+3x-2+1x-1)=

Gx(4,3)=(7x1+3x2+1x1+7x-1+5x-2+1x-1)=

Gx(4,4)=(2x1+3x2+1x1+6x-1+1x-2+1x-1)=

Gx(4,5)=(7x1+5x2+1x1)=

Gx(5,1)=(3x1+1x2)=

Gx(5,2)=(7x1+4x2+3x-1+1x-2)=

Gx(5,3)=(3x1+1x2+5x-1+1x-2)=

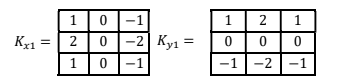
Gx(5,4)=(3x1+1x2+1x-1+1x-2)=

Gx(5,5)=(5x1+1x2)=

Đạo hàm theo hướng x là :

|Gx|=

+Xác định đạo hàm biên theo hướng y:

****

Gy=(1,1)=(1x-2+3x-1)=

Gy=(1,2)= (-1x1+-2x3+3x-1)=

Gy=(1,3)= (3x-1+3x-2+7x-1)=

Gy=(1,4)= (3xx-1+7x-2+3x-1)=

Gy=(1,5)= (7x-1+3x-2)=

Gy=(2,1)= (3x2+4x1+7x-2+7x-1)=

Gy=(2,2)= (3x1+4x2+6x1+7x-1+7x-2+2x-1)=

Gy=(2,3)= (4x1+6x2+1x1+7x-1+2x-2+7x-1)=

Gy=(2,4)= (6x1+1x2+2x1+2x-1+7x-2+6x-1)=

Gy=(2,5)= (1x1+2x2+7x-1+6x-2)=

Gy=(3,1)= (1x2+3x1+7x-1+3x-1)=

Gy=(3,2)= (1x1+3x2+3x1+7x-1+3x-2+3x-1)=

Gy=(3,3)= (3x1+3x2+7x1+3x-1+3x-2+5x-1)=

Gy=(3,4)= (3x1+7x2+3x1+3x-1+5x-2+1x-1)=

Gy=(3,5)= (7x1+3x2+5x-1+1x-2)=

Gy=(4,1)= (7x2+7x1+4x-2+1x-1)=

Gy=(4,2)= (7x1+7x2+2x1+4x-1+1x-2+1x-1)=

Gy=(4,3)= (7x1+2x2+7x1+1x-1+1x-2+1x-1)=

Gy=(4,4)= (2x1+7x2+6x1+1x-1+1x-2+1x-1)=

Gy=(4,5)= (7x1+6x2+1x-1+1x-2)=

Gy=(5,1)= (7x2+3x1)=

Gy=(5,2)= (7x1+3x2+3x1)=

Gy=(5,3)= (3x1+3x2+5x1)=

Gy=(5,4)= (3x1+5x2+1x1)=

Gy=(5,5)= (5x1+1x1)=

Đạo hàm theo hướng y là :

|Gy|=

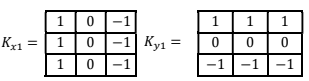
+Đường biên cho cả 2 hướng x và y :

G = |Gx| + |Gy| =

Bài 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

+Xác định đường biên theo hướng x:

****

Gx(1,1)=(-4-3)= -7

Gx(1,2)=(3+1-6-3)=-5

Gx(1,3)=(4+3-1-7)=-1

Gx(1,4)=(6+3-2-3)=4

Gx(1,5)=(1+7)=8

Gx(2,1)=(-4-3-7)=-14

Gx(2,2)=(3+1+7-6-3-2)=0

Gx(2,3)=(4+3+7-1-7-7)=-1

Gx(2,4)=(6+3+2-2-3-6)=0

Gx(2,5)=(1+7+7)=15

Gx(3,1)=(-3-7-3)=-13

Gx(3,2)=(1+7+7-3-2-3)=7

Gx(3,3)=(3+7+3-7-7-5)=-6

Gx(3,4)=(3+2+3-3-6-1)=-2

Gx(3,5)=(7+7+5)=19

Gx(4,1)=(-7-3-1)=-11

Gx(4,2)=(7+7+4-2-3-1)=12

Gx(4,3)=(7+3+1-7-5-1)=-2

Gx(4,4)=(2+3+1-6-1-1)=-2

Gx(4,5)=(7+5+1)=13

Gx(5,1)=(-3-1)=-4

Gx(5,2)=(7+4-3-1)=7

Gx(5,3)=(3+1-5-1)=-2

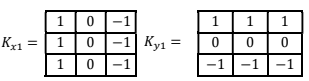
Gx(5,4)=(3+1-1-1)=2

Gx(5,5)=(5+1)=6

|Gx|=

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7 | 5 | 2 | 4 | 8 |
| 14 | 0 | 1 | 0 | 15 |
| 13 | 7 | 6 | 2 | 19 |
| 11 | 12 | 2 | 2 | 13 |
| 4 | 7 | 2 | 2 | 6 |

+Xác định đường biên theo hướng y:

****

Gy(1,1)=(-3-4)=-7

Gy(1,2)=(-1-3-3)=-7

Gy(1,3)=(-3-3-7)=-13

Gy(1,4)=(-3-7-3)=-13

Gy(1,5)=(-7-3)=-10

Gy(2,1)=(3+4-7+7)=7

Gy(2,2)=(3+4+6-7-7-2)=-3

Gy(2,3)=(4+6+1-7-2-7)=-5

Gy(2,4)=(6+1+2-2-7-6)=-6

Gy(2,5)=(1+2-7-6)=-10

Gy(3,1)=(1+3-7-3)=-6

Gy(3,2)=(1+3+3-7-3-3)=-6

Gy(3,3)=(3+3+7-3-3-5)=2

Gy(3,4)=(3+7+3-3-5-1)=4

Gy(3,5)=(7+3-5-1)=4

Gy(4,1)=(7+7-4-1)=9

Gy(4,2)=(7+7+2-4-1-1)=10

Gy(4,3)=(7+2+7-1-1-1)=13

Gy(4,4)=(2+7+6-1-1-1)=12

Gy(4,5)=(7+6-1-1)=11

Gy(5,1)=(7+3)=10

Gy(5,2)=(7+3+3)=13

Gy(5,3)=(3+3+5)=11

Gy(5,4)=(3+5+1)=9

Gy(5,5)=(5+1)=6

|Gy|=

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7 | 7 | 13 | 13 | 10 |
| 7 | 3 | 5 | 6 | 20 |
| 6 | 6 | 2 | 4 | 4 |
| 9 | 10 | 13 | 12 | 11 |
| 10 | 13 | 11 | 9 | 6 |

+Đường biên cho cả 2 hướng x ,y được xác định như sau:

G = |Gx| + |Gy|

G =

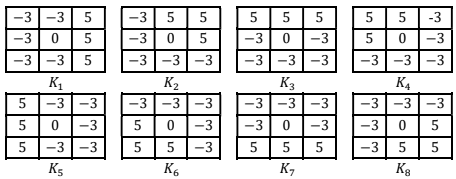
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 14 | 12 | 14 | 17 | 18 |
| 21 | 3 | 6 | 6 | 25 |
| 19 | 13 | 8 | 6 | 21 |
| 20 | 22 | 15 | 14 | 24 |
| 14 | 20 | 13 | 11 | 12 |

Bài 4:

Ma trận đầu vào kích thước 5x5:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

8 mặt nạ của toán tử Kirsch:

****

+ Tính đường biên theo 8 hướng:

-Đường biên theo mặt nạ K1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 32 |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K3:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K4:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K5:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K6:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K7

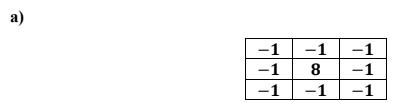
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

-Đường biên theo mặt nạ K8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Bài 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

****

I(1,1)=(8\*3-4-1)=19

I(1,2)=(8\*4-3-6-1-3-3)=16

I(1,3)=(6\*8-4-1-3-3-7)=30

I(1,4)=(8-6-2-3-7-3)=-13

I(1,5)=(2\*8-1-7-3)=5

I(2,1)=(-3-4-3-7-7+8)=-16

I(2,2)=(3\*8-3-4-6-7-7-2-1-3)=-9

I(2,3)=(3\*8-4-6-1-7-2-7-3-7)=-13

I(2,4)=(7\*8-6-1-2-3-3-2-7-6)=26

I(2,5)=(-1-2-7-7-6+3\*8)=1

I(3,1)=(7\*8-1-3-7-3-7)=35

I(3,2)=(-1-3-3-7-2-7-3-3+8\*7)=27

I(3,3)=(2\*8-3-3-7-7-7-3-3-5)=-22

I(3,4)=(7\*8-3-7-3-2-6-3-5-1)=26

I(3,5)=(6\*8-7-3-7-5-1)=25

I(4,1)=(7\*8-7-7-3-4-1)=34

I(4,2)=(3\*8-7-7-2-7-3-4-1-1)=-8

I(4,3)=(3\*8-7-2-7-3-5-1-1-1)=-3

I(4,4)=(5\*8-2-7-6-3-1-1-1-1)=18

I(4,5)=(8-7-6-5-1-1)=-12

I(5,1)=(4\*8-7-3-1)=21

I(5,2)=(8-7-3-3-4-1)=-10

I(5,3)=(8-3-3-5-1-1)=-5

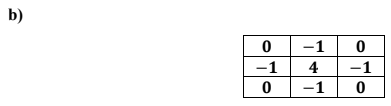
I(5,4)=(8-3-5-1-1-1)=-3

I(5,5)=(8-5-1-1)=1

Biên ảnh:

G = |I ⊕ H|=

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 19 | 16 | 30 | 13 | 5 |
| 16 | 9 | 13 | 26 | 1 |
| 35 | 27 | 22 | 26 | 25 |
| 34 | 8 | 3 | 18 | 12 |
| 21 | 10 | 5 | 3 | 1 |

****

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 | 4 | 6 | 1 | 2 |
| 1 | 3 | 3 | 7 | 3 |
| 7 | 7 | 2 | 7 | 6 |
| 7 | 3 | 3 | 5 | 1 |
| 4 | 1 | 1 | 1 | 1 |

I(1,1)=(4\*3-4-1)=7

I(1,2)=(4\*4-3-6-3)=4

I(1,3)=(4\*6-4-1-3)=16

I(1,4)=(4-6-2-7)=-11

I(1,5)=(2\*4-1-2-7)=-2

I(2,1)=(4-3-3-7)=-9

I(2,2)=(3\*4-4-1-3-7)=-3

I(2,3)=(3\*4-6-3-7-2)=-6

I(2,4)=(7\*4-1-3-3-7)=14

I(2,5)=(3\*4-2-7-6)=-3

I(3,1)=(7\*8-1-7-7)=41

I(3,2)=(7\*8-3-7-3-2)=41

I(3,3)=(2\*8-3-7-3-7)=-4

I(3,4)=(7\*8-7-2-6-5)=36

I(3,5)=(6\*8-3-7-1)=37

I(4,1)=(7\*8-7-3-4)=42

I(4,2)=(3\*8-7-7-3-1)=6

I(4,3)=(3\*8-3-2-5-1)=13

I(4,4)=(5\*8-7-3-1-1)=28

I(4,5)=(8-6-5-1)=-4

I(5,1)=(4\*8-7-1)=24

I(5,2)=(8-3-4-1)=0

I(5,3)=(8-3-1-1)=3

I(5,4)=(8-5-1-1)=1

I(5,5)=(8-1-1)=6

Biên ảnh:

G = |I ⊕ H|

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 7 | 4 | 16 | 11 | 2 |
| 9 | 3 | 6 | 14 | 3 |
| 41 | 41 | 4 | 36 | 37 |
| 42 | 6 | 13 | 28 | 4 |
| 24 | 0 | 3 | 1 | 6 |