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Image beta

1. 0.3422
2. 0.3088
3. 0
4. 0
5. 0.1963
6. 0
7. 0
8. 0.24
9. 0.07
10. 0

Code:

function [ beta ] = SP( image )

[M, N] = size(image);

image = double(image);

% horizontal pairs

x1 = 0;

y1 = 0;

kappa1 = 0;

% vertical pairs

x2 = 0;

y2 = 0;

kappa2 = 0;

for i = 1:M

for j = 1:N

if (j ~= N) % horizontal

r1 = image(i, j);

s1 = image(i, j+1);

if (mod(s1, 2)==0 && r1<s1) || (mod(s1, 2)==1 && r1>s1)

x1 = x1 + 1;

end

if (mod(s1, 2)==0 && r1>s1) || (mod(s1, 2)==1 && r1<s1)

y1 = y1 + 1;

end

if (ceil(r1/2)==ceil(s1/2))

kappa1 = kappa1 + 1;

end

end

if i ~= M % vertical

r2 = image(i, j);

s2 = image(i+1, j);

if (mod(s2, 2)==0 && r2<s2) || (mod(s2, 2)==1 && r2>s2)

x2 = x2 + 1;

end

if (mod(s2, 2)==0 && r2>s2) || (mod(s2, 2)==1 && r2<s2)

y2 = y2 + 1;

end

if (ceil(r1/2)==ceil(s1/2))

kappa2 = kappa2 + 1;

end

end

end

end

a = 2\*kappa1;

b = 2\*(2\*x1-M\*(N-1));

c = y1-x1;

beta11 = real((-b + (b^2-4\*a\*c)^0.5)/(2\*a));

beta12 = real((-b - (b^2-4\*a\*c)^0.5)/(2\*a));

beta1 = min([beta11, beta12])

a = 2\*kappa2;

b = 2\*(2\*x2-M\*(N-1));

c = y2-x2;

beta121 = real((-b + (b^2-4\*a\*c)^0.5)/(2\*a));

beta122 = real((-b - (b^2-4\*a\*c)^0.5)/(2\*a));

beta2 = min([beta121, beta122])

beta = max([beta1, beta2])

end