Code for color autocorrelogram

function colorAutoCorrelogram = colorAutoCorrelogram(image)

% input: image in uint8 form, from wich to extract the color auto correlogram

% output: 1x64 feature vector containing the color auto correlogram

% quantize image into 64 colors = 4x4x4, in RGB space

[img\_no\_dither, map] = rgb2ind(image, 64, 'nodither');

% figure, imshow(img\_no\_dither, map);

rgb = ind2rgb(img\_no\_dither, map); % rgb = double(rgb)

% imshow(rgb);

% rgb = cat(3, r, g, b);

% clear workspace

clear('img\_no\_dither');

% 4 predefined distances between

% neighbor pixel intensities

% according to "Image Indexing Using Color Correlograms" paper

distances = [1 3 5 7];

colorAutoCorrelogram = correlogram(rgb, map, distances);

colorAutoCorrelogram = reshape(colorAutoCorrelogram, [4 4 4]);

% consturct final correlogram using distances

colorAutoCorrelogram(:, :, 1) = colorAutoCorrelogram(:, :, 1)\*distances(1);

colorAutoCorrelogram(:, :, 2) = colorAutoCorrelogram(:, :, 2)\*distances(2);

colorAutoCorrelogram(:, :, 3) = colorAutoCorrelogram(:, :, 3)\*distances(3);

colorAutoCorrelogram(:, :, 4) = colorAutoCorrelogram(:, :, 4)\*distances(4);

% reform it to vector format

colorAutoCorrelogram = reshape(colorAutoCorrelogram, 1, 64);

end

% check if point is a valid pixel

function valid = is\_valid(X, Y, point)

if point(1) < 0 || point(1) >= X

valid = 0;

end

if point(2) < 0 || point(2) >= Y

valid = 0;

end

valid = 1;

end

% find pixel neighbors

function Cn = get\_neighbors(X, Y, x, y, dist)

cn1 = [x+dist, y+dist];

cn2 = [x+dist, y];

cn3 = [x+dist, y-dist];

cn4 = [x, y-dist];

cn5 = [x-dist, y-dist];

cn6 = [x-dist, y];

cn7 = [x-dist, y+dist];

cn8 = [x, y+dist];

points = {cn1, cn2, cn3, cn4, cn5, cn6, cn7, cn8};

Cn = cell(1, length(points));

for ii = 1:length(points)

valid = is\_valid(X, Y, points{1, ii});

if (valid)

Cn{1, ii} = points{1, ii};

end

end

end

% get correlogram

function colors\_percent = correlogram(photo, Cm, K)

[X, Y, ttt] = size(photo);

colors\_percent = [];

for k = 1:K

countColor = 0;

color = zeros(1, length(Cm));

for x = 2:floor(X/10):X

for y = 2:floor(Y/10):Y

Ci = photo(x, y);

Cn = get\_neighbors(X, Y, x, y, k);

for jj = 1:length(Cn)

Cj = photo( Cn{1, jj}(1), Cn{1, jj}(2) );

for m = 1:length(Cm)

if isequal(Cm(m), Ci) && isequal(Cm(m), Cj)

countColor = countColor + 1;

color(m) = color(m) + 1;

end

end

end

end

end

for ii = 1:length(color)

color(ii) = double( color(ii) / countColor );

end

colors\_percent = color;

end

end