Color Recognition

uses color_picker.m to display colors within an image

```
function [ colors ] = color_rec( filename )

X = imread(filename);
I = X(1:end, 1:end, 1:3);
I2 = rgb2hsv(I);

% figure
% imshow(X)
I2_1 = I2(:,:,1);
I2_2 = I2(:,:,2);
I2_3 = I2(:,:,3);

figure('Name','Histograms of Image Pixels')

subplot(2,2,1)
histogram(I2_1)
title('Auto-binned Hue')

subplot(2,2,2)
histogram(I2_1,[1*10^-10,0.01,0.125,0.3,0.6,0.75,0.9,1])
title('Hue Binned Based on Color Wheel')

subplot(2,2,3)
histogram(I2_2)
title('Saturation')

subplot(2,2,4)
histogram(I2_3)
title('Value')

a = color_picker(I2_1,I2_3);
colors = [strcat('Background',': ',a(1));strcat('Shape Color',': ',a(2));strcat('Alphanumer
ic Color',': ', a(3))];
end

function [ colors ] = color_picker( hue, val)
%color_picker Chooses the top three colors in an image using the hue and
%value channels


counth = histcounts(hue,[0,1*10^-10,0.01,0.125,0.3,0.6,0.75,0.9,1]);
counth = [counth;1 2 3 4 5 6 7 8];
counth = counth.';
sorted_h = sortrows(counth);

countv = histcounts(val,[0,0.1,0.8,1]);
countv = [countv;1 2 3];
countv = countv.';
sorted_v = sort(countv);
```

```
chm = sorted_h(6:8,2);
cvm = sorted_v(:,2);

colors = {'';'';''};

for i = 1:3
    if (chm(4-i) == 2)
        colors(i) = {'Red'};
    elseif (chm(4-i) == 3)
        colors(i) = {'Orange'};
    elseif (chm(4-i) == 4)
        colors(i) = {'Yellow'};
    elseif (chm(4-i) == 5)
        colors(i) = {'Green'};
    elseif (chm(4-i) == 6)
        colors(i) = {'Blue'};
    elseif (chm(4-i) == 7)
        colors(i) = {'Purple'};
    elseif (cvm(4-i) == 1)
        colors(i) = {'Black'};
    elseif (cvm(4-i) == 3)
        colors(i) = {'White'};
    end
end
end
```

```
Error using color_rec (line 7)
Not enough input arguments.
```

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