

CS6640 A6: More Info

Classify Algorithm

```
% classify algorithm (for problems 1-3)

for all connected components, cc
    get a model, m_cc, for cc
    for all models, m_k
        pick model m_k which minimizes Euclidean distance |m_cc-m_k|
    end
    set imo pixels for that cc to m_k (if close enough)
end
```

RFE

```
get border points, pts (as rows,cols)
get mean of pts: rm, cm
get distance from [rm,cm] to each [r,c] in pts --> produces f
get Fourier coefficients: F = fft(f)
get amplitudes: A = abs(F)
sort amplitudes: [vals,indexes] = sort(A,'descend')
keep top n values: indexes(1:n)
set s (as a column vector nx1)
```

Hu Moments

need CS6640_Hu_M and CS6640_Hu_eta

PCA

get covariance matrix (i.e., use cov)

get eigenstuff (use eig function)

rotate points (ptsr = (V'*T'))

get number of dimensions to keep: $q = \text{floor}(p*d)$

keep last q dimensions: ptsd = ptsr(:,q:d)

call kmeans with ptsd

how to check? → use the T set in CS6640_Week12.m

PCA_kmeans:

```
[cidx, ctrs] = CS6640_PCA_kmeans(T, 1/2, 2);
```

should produce 2 clusters:

cidx =

1

1

1

2

2

2

with centers:

ctrs =

-6.9282

6.9282

Run on $728*1477*44$ vectors with FFT, Laws and RGB dimensions