QUESTION FOR FINAL EXAM

1. Histograms

Texture is made up of repeated local patterns, so to represent texture we need to:

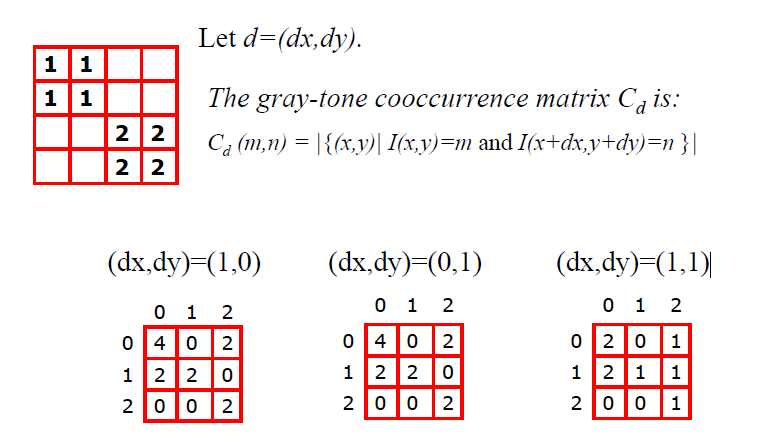
* Use filters that look like patterns and consider magnitude of response to find the patterns.
* Use mean, standard deviation, histogram and histogram of “prototypical” feature occurrences to describe their statistics.

*Comparing histograms is the simplest texture discrimination.*

Dividing intensities into discrete ranges and counting how many pixels in each range are the steps to compare histograms. One may calculate chi square distance between texton histograms. Distance reveals dissimilar texture.

*Texture representation:*

Original image is filtered, squared and statistics to summarize patterns in small windows. Mean d/dx and d/dy values in statistics table are used to group consistent pixels in windows with primarily horizontal and vertical edges. Finally, compare dissimilarity texture by computing distance between pixels in groups.

1. Co-occurrence Matrices and Features
2. 
3. Filter banks

Before, one can used two filters, and result in a 2-dimensional feature vector to describe texture in a window. Besides, we can generalize to apply a collection of multiple (d) filters: a “filter bank” and result in d-dimensional feature vectors.

We want to have filters with combination of scales and orientations, different types of patterns and put them into bank.

1. Gorbor Filters
2. Markov Radom Field
3. Markov Chain – Transition Table
4. Texture synthesis: intuition
5. Unit of synthesis – block
6. How to detect circle? (transform)
7. How to transform general line?
8. Prove : = tan-1()
9. Derivation theorem of convolution
10. How to transform continue Gaussion fuction( Line problem )
11. Sharpening