Demo Session for Lecture Notes-02

Color-Retrieval
Template-Filtering

Colour-Based Image Retrieval

- You are given an image database `images_color_se,` which contains multiple images of different views and colors. It looks something like shown like shown in next page.
- Write a function which given an query image would provide most related images based on color histogram matching. Details and example explained in next few pages.
- Use both RGB and HSV image formats to view the query results of color matching. Which one gives you better results?


100401.jpg

100500.jpg

100501.jpg

100502.jpg

100503.jpg

100600.jpg

100601.jpg

100700.jpg

100701.jpg

100800.jpg

100801.jpg

100900.jpg

100901.jpg

100902.jpg

101100.jpg

101101.jpg

101200.jpg

101201.jpg

101300.jpg

101301.jpg

124000.jpg

124002.jpg

124400.jpg

124401.jpg

124500.jpg

124501.jpg

124601.jpg

124700.jpg

124701.jpg

124800.jpg

124801.jpg

124802.jpg

124900.jpg

124901.jpg

125000.jpg

125001.jpg

125100.jpg

125101.jpg

125102.jpg

125200.jpg

125201.jpg

125202.jpg

125203.jpg

125300.jpg

125900.jpg

125901.jpg

126400.jpg

126401.jpg

126402.jpg

126500.jpg

126501.jpg

126502.jpg

126600.jpg

126601.jpg

126700.jpg

Colour-Based Image Retrieval

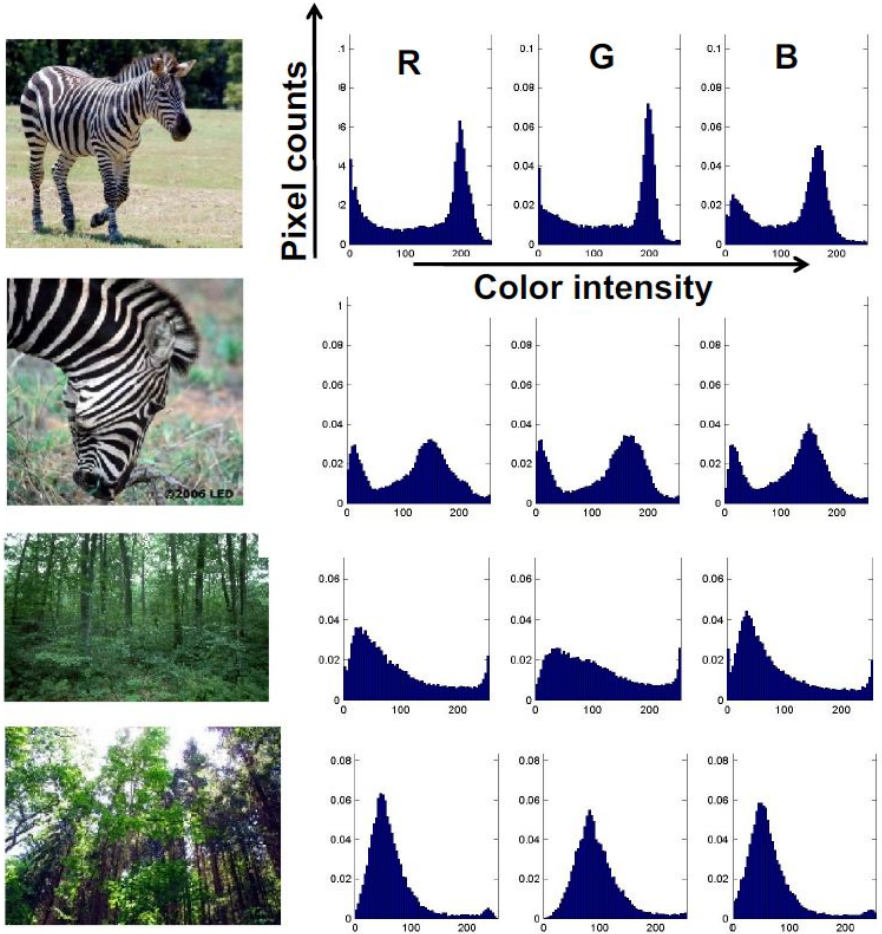
Given collection (database) of images:

- Extract and store one* color histogram per image

Given new query image:

- Extract its color histogram
- For each database image:
  - Compute intersection between query histogram and database histogram
- Sort intersection values (highest score = most similar)
- Rank database items relative to query based on this sorted order

Slide Credit: Kristin Grauman



- No spatial information – invariant to translation, rotation, scale
- Not very discriminative

Slide Credit: Kristin Grauman

Colour-Based Image Retrieval

query






query






query






Template Matching

- Template Matching is a method for searching and finding the location of a template image in a larger image. OpenCV comes with a function `cv.matchTemplate()` for this purpose. It simply slides the template image over the input image (as in 2D convolution) and compares the template and patch of input image under the template image.
- You are given `Template.png` and `MainImage.png`. Write a template matching function which plots box in the MainImage where the template matches the best.
- You can reference OpenCV example (link) to get knowledge of the APIs available.

Given Input

MainImage.png

Template.png

Expected Output