COC202 Computer Vision
Lab 4 – Content-based image retrieval

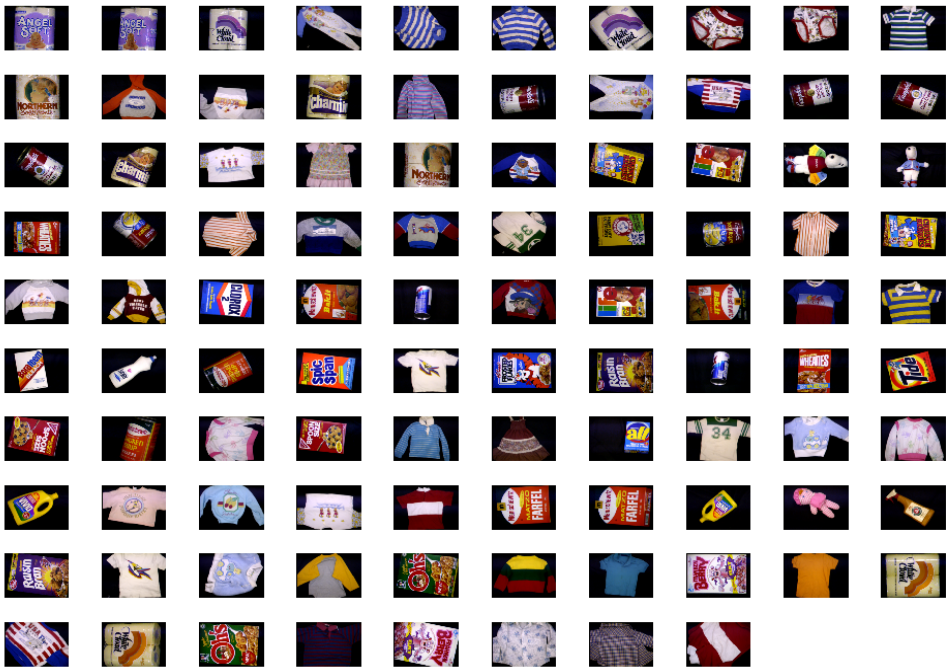
In this lab, you will implement some Matlab algorithms to perform content-based image retrieval based on colour histograms.

If you have not yet finished the exercises from the previous lab, do them first.

1. Write a function that is passed an image and returns its colour histogram. The colour histogram should be a normalised 3-dimensional histogram in RGB space with 8x8x8 bins (i.e. the RGB space is (uniformly) partitioned into 8 bins along each dimension).

2. Write a function that is passed two (colour) histograms and returns their histogram intersection score.

3. Download the image database provided on Learn, and perform – using the two functions from above – content-based image retrieval in a QBE (query by example) fashion, i.e. calculate the colour histograms for all images, select one image as the query, calculate the visual similarities to all other images, and return the database images sorted by similarity. The output could look something like this:



Matlab functions that should be useful here: `imageDatastore`, `sort`, `subplot`.

Once you have finished all exercises you may leave the lab.

Additional exercises for further study:

4. How well does your retrieval work? Try a query with image *carebears2* or *redwhite*. Can you think of a modification to the colour histograms that would allow better retrieval accuracy?