Tampering detection and localization in images from social networks: A CBIR approach
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**Step 1 : Content-based image retrieval system**

- **Goal** : Find the best image in our database for a comparison with the query.
- **Method**:
  1. Find the 10 most similar images with a dot product using the descriptors explain below. Research is accelerated with a KD-Tree approach.
  2. Reorder these 10 candidates in order to find the best candidate.

Descriptors used based on VGG19 [1]

- Two sizes used : training images size or based on a kernelization step like [2]
- Three vectors are analyzed based on the output of three layers: last convolutional layer $C_5$ with a output lenght of 512 and the fully-connected layers $C_6$ and $C_7$ with a output length of 4096 for both
- A mean or max pooling have to be apply in the case of $C_5$ when we used the standard training images size and the three outputs in case of kernelized approach.

**Step 2 : Homography estimation**

- **Goal** : compare the two images and find the forged area if there is one
- **Method**:
  1. Match keypoints from the images by similarity.
  2. Define a homography based on RANSAC [8]
  3. Define a density map based on the list of outliers and binarize the map with a known threshold.
  4. Match keypoints from the images by similarity.

**Queries** : *(Total : 2,346 images)*

- Reddit : 254, forged
- F600 [3] : 400, original

**Database** : *(Total : 154,558 images)*

- Twitter : 152,754 + 16
- Reddit : 128

**Results of the first step**

**Datasets**

**Results of the second step**

**Refs**