Image Similarity Comparison

Daniel Csillag

15/10/2019

Contents

Prelude

Neural Networks

...

Finding Similarities Between the Images

We want to somehow visualize our set of images based on their similarities — that is, similar images should be close together, and non-similar ones should be far away.

All the approaches given below following a common idea: map each image to some vector in $\mathbb{R}^n$, and then use some dimensionality reduction procedure in order to visualize it.

Mapping images to vectors

Approach #1: MobileNet Logits

This is the approach used in Vikus Viewer.

TODO

Cosine Similarity

TODO

Approach #2: VGG-16 Feature Vectors

This was inspired by ....

TODO

Cosine Similarity

TODO

Dimensionality Reduction: t-SNE

TODO

Preparing the Dataset

When making effective interfaces, it is good practice to preprocess whatever possible to avoid excessive computation at runtime. In this project, several things were preprocessed, and are now explained:

Finding the images' geolocation

TODO

Finding the images' similarities

The procedure explained in the "Finding Similarities Between the Images" section.

All that is stored in the database is the X and Y coordinates of the t-SNE visualization of the images' vectors.

Implementing the Interface

...