Sketch-based Image Retrieval

Project proposal

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Task and Motivation

Task:
Train a fast neural network architecture such that sketch based image retrieval can be performed.
Motivation:
Nowadays a lot of people use their mobile devices to store and manage their photos, but usually in a unordered fashion and therefore searching for images becomes a torture. So a fast and general sketch based image retrieval algorithm could support the search.
Related work:
A Zero-Shot Framework for Sketch Based Image Retrieval. ECCV 2018 [6]
The Sketchy Database: Learning to Retrieve Badly Drawn Bunnies [1]
DigiKam search functionality [4]

Goals

End of the project:
Implement different sketch based image retrieval approaches and compare them.
Midterm:

- Generate synthetic sketches as described in SketchGAN [1],
- Setup code for GoogLeNet [5]
- Setup database and gui, to test usability and speed.

Methods

Implement a siamese network and a triplet network, with different feature extractor networks (ResNet, MobileNet, GoogLeNet)

References:

- A Zero-Shot Framework [6]
- GoogLeNet [5]
- ResNet [2]
- MobileNet [3]

Code/Tools

- `https://github.com/janesjanes/sketchy`

Data

We will use the sketchy database, enlarged with the technique described in sketchyGAN [1]

Evaluation

- We will use mAP and precision-recall curves on a hold out set.
- User study

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