Zero-Shot Sketch-Based Image Retrieval with Disentangled Representation

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Abstract

pass

1. Introduction

The importance of our research area

Some progress in sketch based image retrieval

Difficulty in Zero-shot setup and some possible solutions

Our proposed methods and their advantages

itemize our contributions in this paper

2. Related Work

2.1. Sketch-based image retrieval

2.2. Zero-Shot Learning

2.3. Disentangled Representation

3. Methodology

There will be five parts in this section. Sec. 3.1 defines the our targeted problem and briefly introduce our framework. Sec.3.2 introduce the encoders in our model. Sec. 3.3 introduce the decoder in our model. Sec. 3.4 introduce the discriminator in our model. Sec. 3.5 introduce the design of loss functions during training procedure.

3.1. Problem Definition and Overall model

In this paper, we focus on solving the problem of hand-free sketch-based image retrieval using disentangled feature representation under zero-shot setup, where only the sketchs and images from seen classes are used during training stage. Our proposed framework is expected to use the sketchs to retrieve the images, the categories of which have never appeared during training.

We first provide a definition of the SBIR in zero-shot setup. Given a dataset $S = \{(x_i^{img}, x_i^{ske}, x_i^{sem}, y_i)|y_i \in \mathcal{Y}\}$

3.2. Encoder

3.3. Generator

3.4. Discriminator

3.5. Loss Function

4. Experiment

4.1. Experiment Setup

4.1.1 Dataset

4.1.2 Implementation Details

4.2. Comparison

4.3. Ablation Study

4.4. Case study

5. Conclusion

6. To Discuss

- Whether to generator the whole image/sketch.
- If the poses between the image and the sketch are different, can the model learn the sketch information between image and sketch.
- Where to add the semantics information to further supervise the model's training.