

View Reviews

Paper ID

343

Paper Title

Scalable Logo Recognition using Proxies

Track Name

Second Round Submission

Reviewer #5

Questions

1. Paper Summary. What is the paper about? Please, be concise (2 to 3 sentences).

This paper formulates logo recognition as a few-shot object detection problem, and tackles it with 1) a class-agnostic logo detector and 2) metric learning. Both components adapt proven techniques. Results are state-of-the-art.

2. [Paper Strengths] Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc).

+ clear exposition of design choices, architectures, and implementation details.

Metric learning is a proven technique to handle few-shot learning problems. The Proxy loss [40] is one of the leading (and easy-to-use) deep metric learning methods currently, so I'd say the authors made the right choice here. For the localization part, the choice of Faster R-CNN is also straightforward, and it's nice that the authors include detailed comparisons against SSD, YOLO, etc.

The difficulties of optimizing the triplet loss are well-documented in the literature. The authors make the intriguing observation that their Proxy-triplet loss outperforms Proxy NCA [40], which is interesting for further research.

+ new & improved dataset.

+ ablation studies on model architectures and losses are nice.

3. [Paper Weaknesses] Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty – given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error.

I'm overall satisfied with this paper. It would be nice if the authors did more research on the proxy-triplet loss, but this shouldn't affect the decision to accept IMHO.

Since the authors use 1 proxy per class, the proxy-triplet loss becomes very similar to the "triplet-center loss" in the paper below. It might even be equivalent, but I didn't fully check. It would be good to elaborate on this.

X. He et al., Triplet-Center Loss for Multi-View 3D Object Retrieval. CVPR 2018

4. Recommendation

Strong Accept

5. [Justification] Justify your recommendation based on the strengths and weaknesses.

Please be considerate to the authors and provide constructive feedback.

The quality of this research is quite good. The good performance of proxy-triplet loss is intriguing, I hope the authors follow up on that.

Reviewer #6

Questions

1. Paper Summary. What is the paper about? Please, be concise (2 to 3 sentences).

This paper addresses the problem of Logo recognition. The authors propose a logo detector, combined with a few shot metric learning approach that aims to categorise unseen logos with only a few examples. In addition, they introduce a novel dataset, which is more challenging and more realistic than previous ones.

2. [Paper Strengths] Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc).

This paper discusses an interesting idea, with many practical applications. The idea of a "logo-ness" of something seems a reasonable thing to learn from data (similar concept to object-ness).

In addition, the dataset with the logos that the authors provide, seems to be more unconstrained with significant intra-class variations.

Experimental section is good, discussion both detection performance (e.g. false detections) and logo recogniser.

The fact that training on PL2K achieves higher performance in FlickrLogos shows that the dataset is able to capture the modalities of the logo recognition problem, and is large enough for good generalisation.

3. [Paper Weaknesses] Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty – given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error.

- The contributions in terms of method are not significant. The authors use quite standard methods to learn their network both in terms of detection, and in terms of metric learning.

4. Recommendation

Probably Accept

5. [Justification] Justify your recommendation based on the strengths and weaknesses. Please be considerate to the authors and provide constructive feedback.

This is a very interesting paper, with important practical applications. The work shows good results, and the experimental discussion is very interesting. In addition, results that the authors provide in Fig7 show that their method is able to handle significant intra-class variations.

While the technical contributions of the paper are not very significant, the good results, combined with the novel dataset leads me to recommend the paper for acceptance, since I think it will an interesting work in the area of logo detection/recognition.

Reviewer #7

Questions

1. Paper Summary. What is the paper about? Please, be concise (2 to 3 sentences).

The paper presents a method for logo recognition. It is composed by two systems. First the logo is detected by an universal logo detector, then the logo is recognized. The paper also presents the first large scale dataset for this task.

2. [Paper Strengths] Please discuss, justifying your comments with the appropriate level of details, the strengths of the paper (i.e. novelty, theoretical approach and/or technical correctness, adequate evaluation, clarity, etc).

The authors presented a large scale dataset, and shared it to the community. The experiments have been conducted extensively. One important strength is given by the test performed on logo dataset different than the one used for training, to evaluate the domain adaptation capabilities of the method, without finetuning.

3. [Paper Weaknesses] Please discuss, justifying your comments with the appropriate level of details, the weaknesses of the paper (i.e. lack of novelty – given references to prior work-, lack of novelty, technical errors, or/and insufficient evaluation, etc). Note: If you think there is an error in the paper, please explain why it is an error.

I don't find so many changes to do. I suggest to extend Figure 2 in double-column, to better show the pipeline.

4. Recommendation

Probably Accept

5. [Justification] Justify your recommendation based on the strengths and weaknesses. Please be considerate to the authors and provide constructive feedback.

The addressed task is clear and the work is well presented, as well as the proposed solution. The experiments are detailed and well designed. The results are positive and convincing. Therefore, I

suggest to accept the paper as is.