

View Meta-Reviews

Paper ID

7

Paper Title

RNNPool: Efficient Non-linear Pooling for RAM Constrained Inference

Track Name

Extended Abstract

META-REVIEWER #2

META-REVIEW QUESTIONS

2. Review

The paper introduces a new pooling operator based on RNN. The experiments show that the proposed operator retain comparable performance of ImageNet-1K while saving both memory and computational requirements but it would be important to share results of more of similar experiments showing that that the accuracy does not degrade in a wider variety of applications.

The paper is well written in general. However please 1) explain/justify if a single feature with a single pooling operation is useful in practice, 2) complete your reference section and follow recommendation from reviewers and address their comments.

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7

Paper Title

RNNPool: Efficient Non-linear Pooling for RAM Constrained Inference

Track Name

Extended Abstract

Reviewer #1

Not Submitted

Reviewer #2

Questions

2. Please assign a grade to the paper:

2: Accept — A good paper that clearly belongs at WiCV, and is in the top 25% of submissions

3. Is this abstract appropriate for WiCV?

Yes

4. Does the abstract adequately convey the material that will be presented?

Yes

5. Does the abstract describe work that is novel and/or interesting?

Yes

6. Write a review evaluating the paper in a minimum of 5 sentences. When evaluating the paper, take into account the following questions: 1. Is this paper appropriate for WiCV (Does it describe original research in Computer Vision or related fields?) 2. Does the abstract describe work that is novel (to the best of your knowledge - you may not be able to adequately answer this if it is not your field) and/or interesting? 3. Does the abstract adequately convey the material that will be presented?

The paper presents a RNN based pooling methods suitable for mobile or resource limited applications. The proposed RNNpool allows a network to drastically reduce the spatial dimension as compared to other standard pooling choices. The paper shows that this does not reduce accuracy for ImageNet-1K, but it would be important to see more of these experiments showing that the accuracy does not degrade in a wider variety of applications.

The experiments (section 1.2) where they compare with other pooling operations are not very convincing, as going from 32x32 image to a single feature with a single pooling operation is not something people do in practice, the baselines are not very realistic. Also this RNNPool requires learning parameters, the convolutional layer comparison should also have the similar number of learnable parameters but it's not specified (possibly due to length). These experimental results are very promising, I am looking forward to see it as a paper where there is more space.

(I noticed that some other abstracts go 2.5 pages, so possibly one could add more experimental details to this document).

One other feedback is that the intro/abstract should be written with the goal of RAN constrained inference at the center front and expand on potential applications such as mobile and what is required. Currently, it's written as if the proposed pooling operation is always better than the more standard choices, but I don't think this is the winning argument. For example, the paper says line 47, "reducing the dimensions.. would require two blocks" --

but this is more of a design choice, one could've done convolution+stride2pool + downsampling. Of course that may not be a good idea, but people can disagree on this statement, also in line 21 "Consequently, CNN tend to be deep", but often the choice to reduce spatial dimensions slowly is a design choice, not because the pooling methods are forcing it to be so. A better argument for this type of work that no one can argue is that "current networks are designed with many layers, which makes it challenging to port it to RAM constrained environment, thus we propose and alternative .."

Reviewer #3

Questions

2. Please assign a grade to the paper:

2: Accept — A good paper that clearly belongs at WiCV, and is in the top 25% of submissions

3. Is this abstract appropriate for WiCV?

Yes

4. Does the abstract adequately convey the material that will be presented?

Yes

5. Does the abstract describe work that is novel and/or interesting?

Yes

6. Write a review evaluating the paper in a minimum of 5 sentences. When evaluating the paper, take into account the following questions: 1. Is this paper appropriate for WiCV (Does it describe original research in Computer Vision or related fields?) 2. Does the abstract describe work that is novel (to the best of your knowledge - you may not be able to adequately answer this if it is not your field) and/or interesting? 3. Does the abstract adequately convey the material that will be presented?

The paper introduces a new pooling operator based on RNN that efficiently aggregates features over image patches. The experiments show that the suggest operator retain comparable performance of multiple networks while saving both memory and computational requirements.

The paper is well written in general. However, there are some necessary notes to be modified:

- Table 2 shows the performance of different variants on RNNPool-Face in comparison to other methods.

Though these results are indeed interesting, the fact that authors skipped the explanation of these variants in the text (probably due to page limit) makes the results less informative. I'd suggest reducing the table size in accordance to text. I think this submission would have been suitable for a full paper. Clearly these are important details that were skipped.

- The paper is missing multiple references such as WIDER dataset and the methods from table 2. It's necessary to cite them.