Evaluation of the Use of Attention in Image Classification

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Supervised by Prof Stephen Gould
Fei Wang et.al proposed a CNN model named “Residual Attention Network”[1], which generates attention-aware features. According to their experiments, their network is robust against noisy labels.
Relationship to Previous Work

Figure 1: Left: an example shows the interaction between features and attention masks. Right: example images illustrating that different features have different corresponding attention masks in our network. The sky mask diminishes low-level background blue color features. The balloon instance mask highlights high-level balloon bottom part features. (F. Wang et al, 2017)
Relationship to Previous Work

• Stephen Gould et.al proposed the idea of deep declarative node in 2019. It is a new class of end-to-end learnable models wherein data processing nodes (or network layers) are defined in terms of desired behavior rather than an explicit forward function[2].

• My work combines the ideas from both works. Since some attention mechanisms don’t have closed-form solutions, using DDN here could possibly help experiment with more mechanisms so as to get better accuracy for the classification task.
Aim

• Try different attention mechanisms and find out which one gives the highest accuracy in Image Classification task.

• Find out whether applying projections with DDN nodes can help get better classification accuracy.
## Time stone

<table>
<thead>
<tr>
<th>week</th>
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| 6     | 1. Run basic experiments  
2. Run experiments with different mechanisms for different attention stages |
| 7-9   | 1. Analyze the results and test about new hypothesizes               |
| 10-11 | 1. Analyze the results and make conclusions  
2. Report writing                                                    |
| 12    | 1. Presentation                                                      |
Citation


Thanks!