RecVis18 Project Proposal

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Project description and work plan

We chose to work on project J : **Visualizing and Understanding Convolutional Networks**.

We follow the plan proposed in the project description.

1. We will first read the article [3], and understand the underlying concepts. We will try to implement the visualization method proposed in the article from scratch using Tensorflow. If we face too many issues during the implementation, we will use the code in the GitHub repository provided in the project description.
2. Besides, we will also implement the mask occlusion method proposed in [3] to bring a complementary perspective on our results.
3. Once our code works, we will apply it to the pretrained convolutional neural network described in [2]. We will discuss the results obtained by both methods on sample images.
4. We will design a simple convolutional neural network and train it on the CIFAR-10 dataset [1] (we may try on CIFAR-100 in case we get encouraging results). Then, using our visualization tool, we will analyze the efficiency of the network structure and incrementally improve its architecture.

Work repartition

We will both read and understand the article [3]. Then Clément will implement the visualization method proposed in the article, and test it on the pretrained model. Meanwhile, Eloïse will implement the mask occlusion method and start working on the CIFAR-10 CNN. Once the visualization tool is ready, we will both work on testing it on the CIFAR-10 network and improving the architecture.

References

[1] Alex Krizhevsky. Learning multiple layers of features from tiny images. Technical report, Citeseer, 2009.

[2] Karen Simonyan and Andrew Zisserman. Very deep convolutional networks for large-scale image recognition. *CoRR*, abs/1409.1556, 2014.

[3] Matthew D Zeiler and Rob Fergus. Visualizing and understanding convolutional networks. In *European conference on computer vision*, pages 818–833. Springer, 2014.