Image segmentation with saliency maps

Course: Neural Networks

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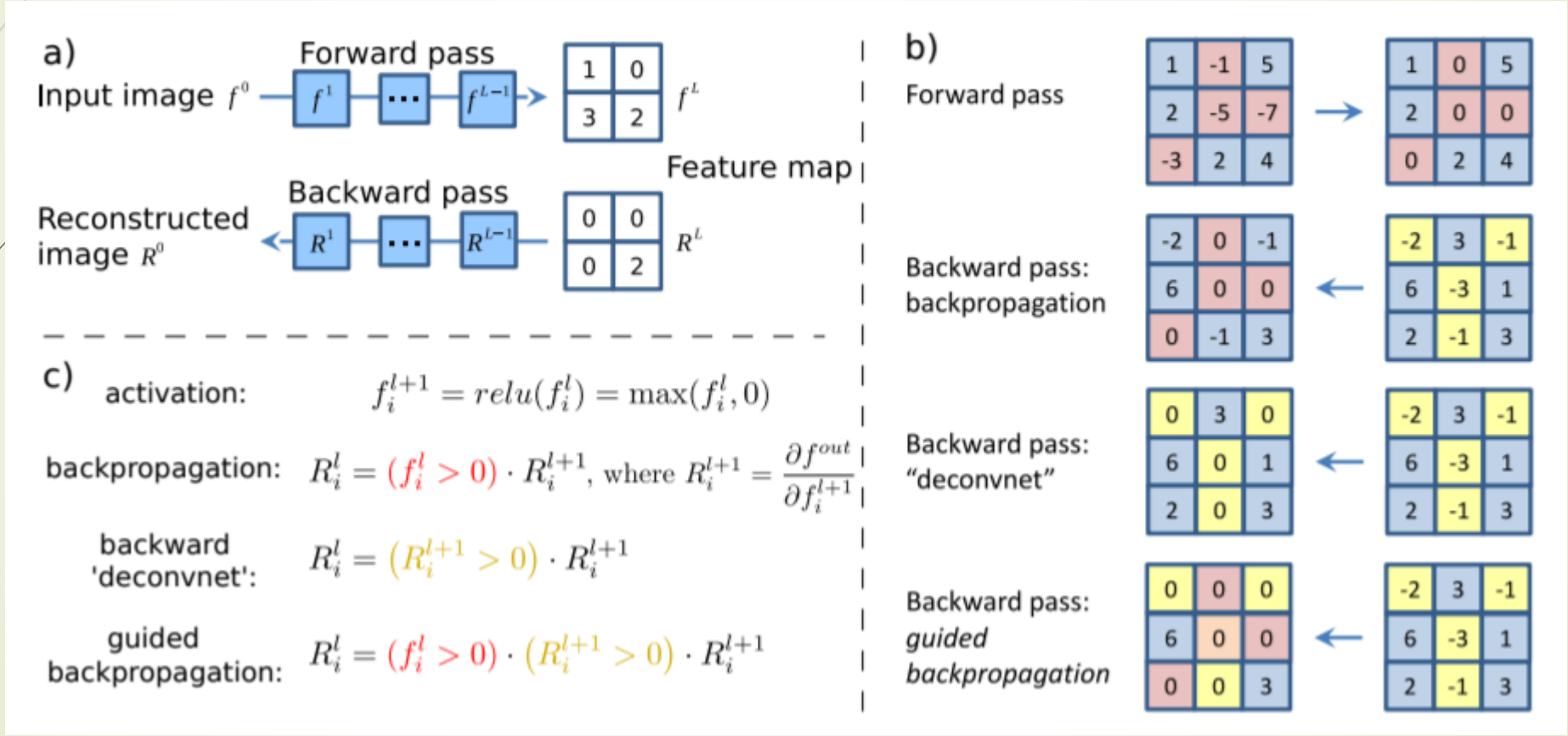
Work plan

- Select a pretrained CNN (Inception v3, VGG16, etc.);
- Choose an image segmentation dataset (CMU-Cornell iCoseg);
- Compute saliency maps (three approaches: backprop, deconv, guided backprop) on the selected dataset;
- Evaluate saliency maps using F-Measure, IOU;
- Combine the best technique of saliency map generation with a segmentation NN.

Datasets

- **CMU-Cornell iCoseg dataset**

Saliency map approaches



References

1. Visualizing and Understanding Convolutional Networks (Zeiler and Fergus, 2013) (https://arxiv.org/abs/1311.2901)

2. Deep Inside Convolutional Networks: Visualising Image Classification Models and Saliency Maps (Simonyan et al., 2014) (https://arxiv.org/abs/1312.6034)

3. Striving for Simplicity: The All Convolutional Net (Springenberg et al., 2015) (https://arxiv.org/abs/1412.6806)

4. Grad-CAM: Visual Explanations from Deep Networks via Gradient-based Localization (Selvaraju et al., 2016) (https://arxiv.org/abs/1610.02391)

5. https://raghakot.github.io/keras-vis/visualizations/saliency/