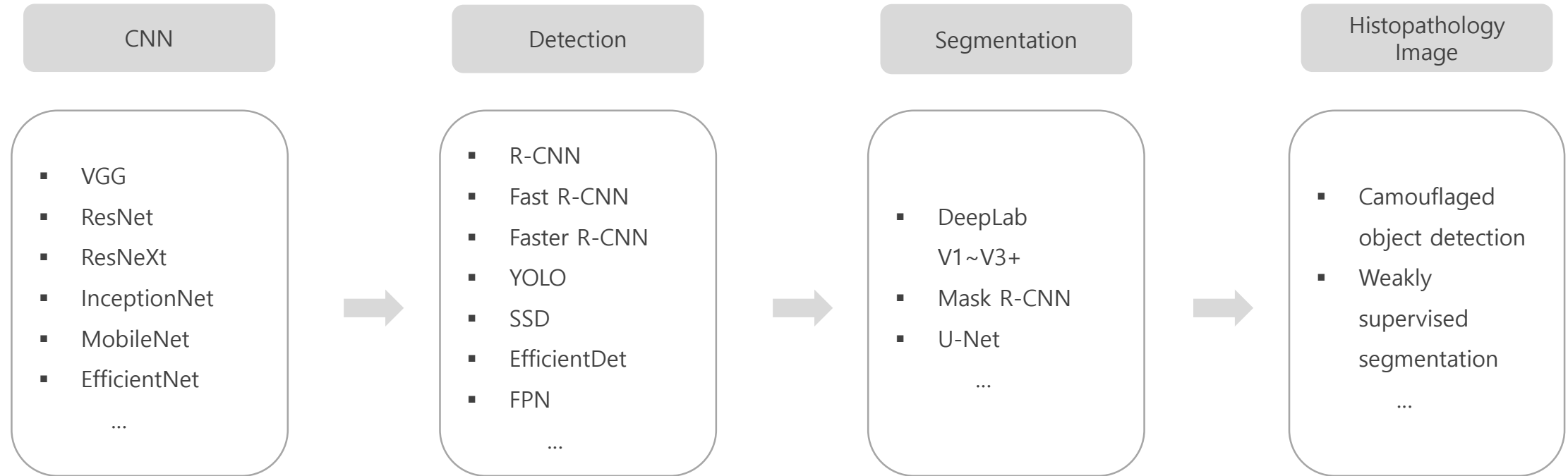


Weakly Supervised Histopathology Image Segmentation

김태미
2021.09.10.

0. Introduction



1. IRN (Weakly Supervised Segmentation with Inter-pixel Relations)

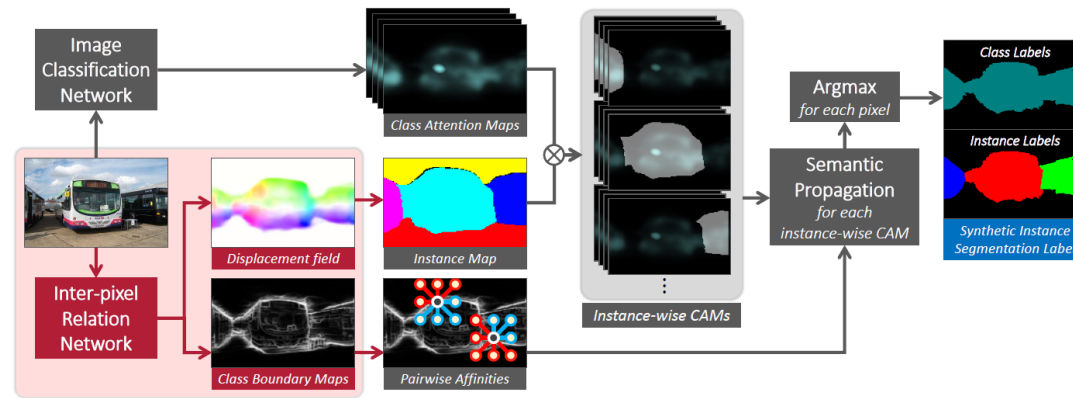


Figure 1. Overview of our framework for generating pseudo instance segmentation labels.

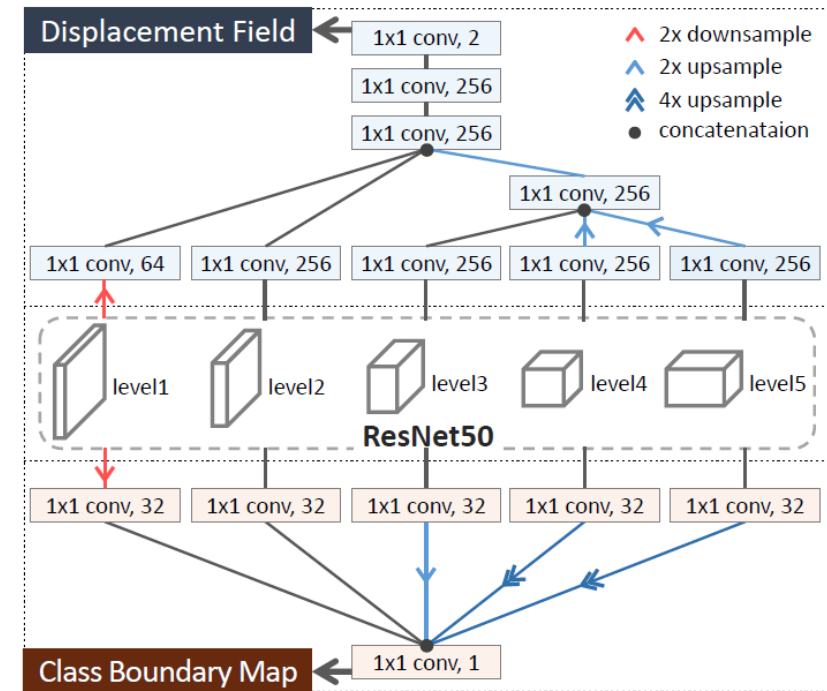


Figure 2. Overall architecture of IRNet.

1. IRN (Weakly Supervised Segmentation with Inter-pixel Relations)

Malignant

- 17 patients (4232 Images)
- train: 12 patients (3018 Images)
- Valid: 5 patients (1214 Images)

Normal

- 32 patients (2174 Images)
- train: 24 patients (1579 Images)
- Valid: 8 patients (595 Images)



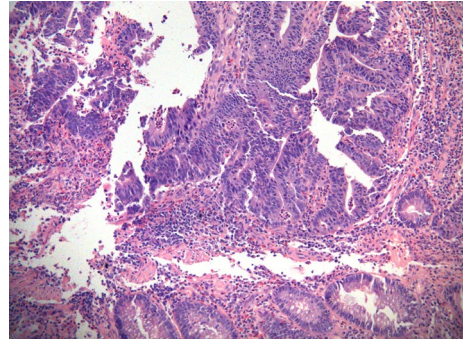
- train: 4597 Images
- Valid: 1809 Images

1. IRN (Weakly Supervised Segmentation with Inter-pixel Relations)

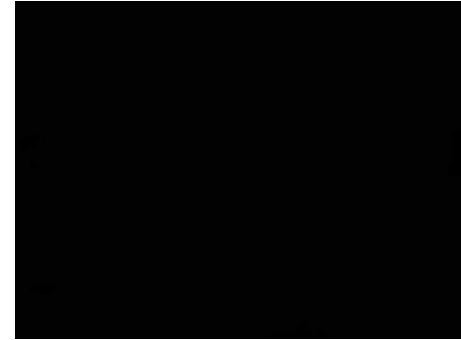
Not trained..

tried multiple learning rate
tried multiple classification network

image



Prediction



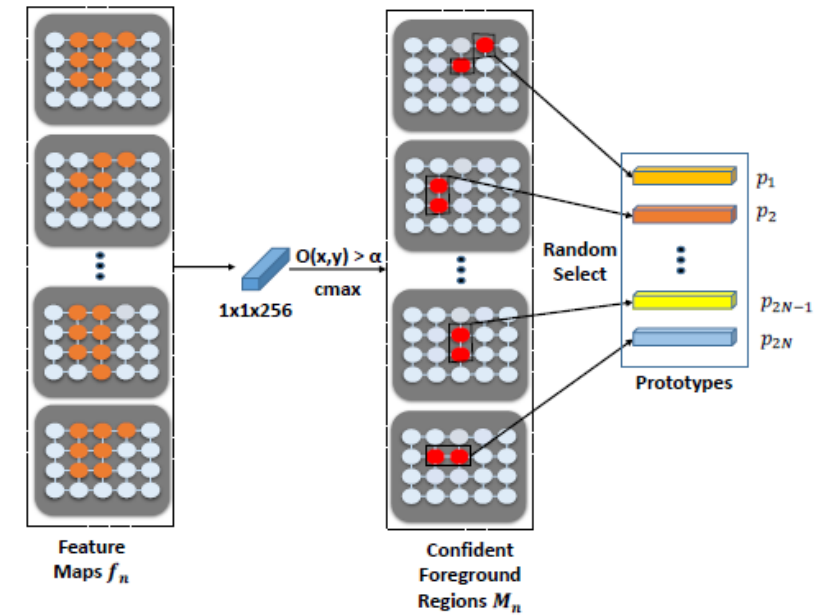
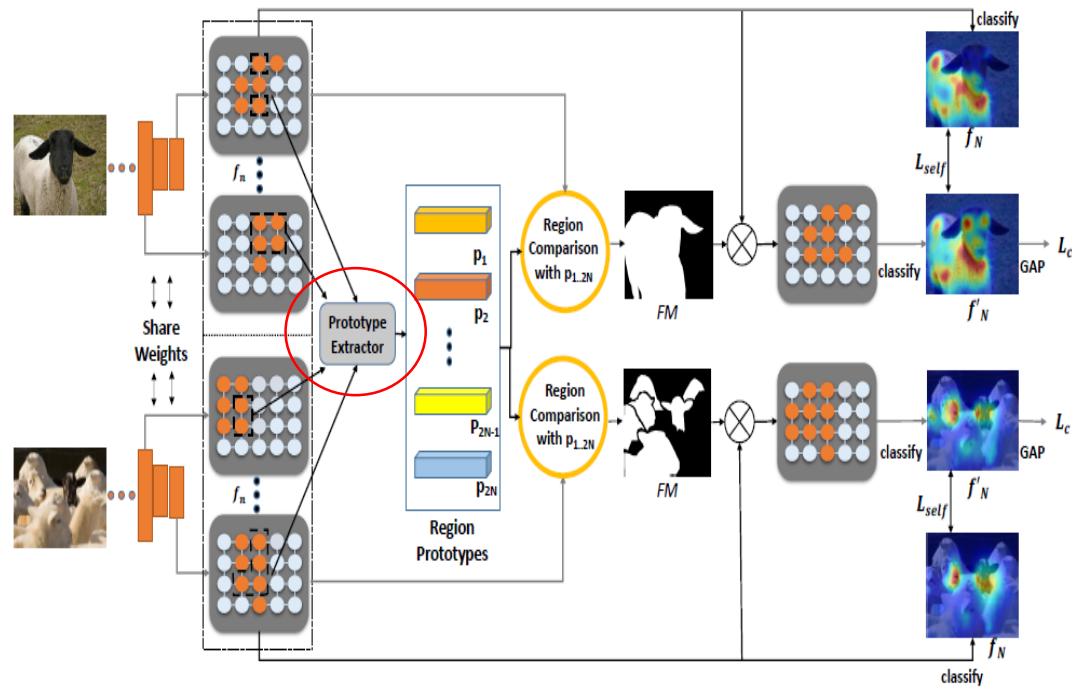
Ground Truth



Classification loss problem

Inaccurate CAM problem

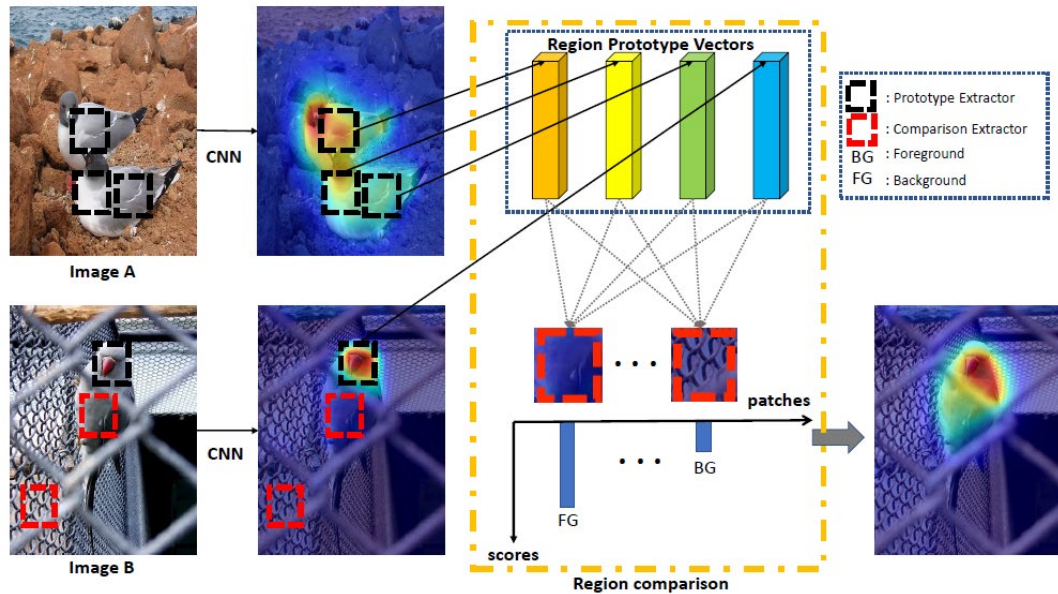
2. Cross-Image Region Mining with Region Prototypical Network



Prototype extractor

feature maps from multiple spatial resolution \rightarrow extract region prototypes \rightarrow region comparison
 \rightarrow produce foreground probability map FM \rightarrow multiply FM with last feature map

2. Cross-Image Region Mining with Region Prototypical Network



f_N : feature map of the last CNN block

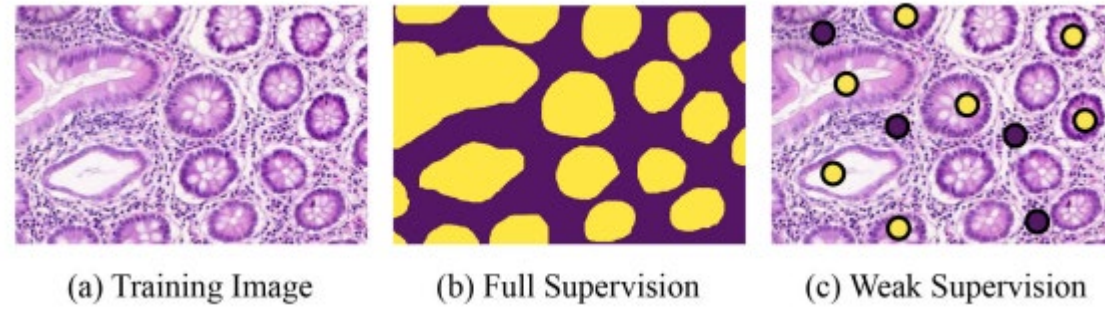
P_n : region prototype vectors, $n = 1, \dots, 2N$

s_n : similarity between f_N and P_n

→ Object regions that are not activated in one sample
can be re-activated by other samples

3. To do...

1. Sparse point annotation



2. Patch-based

