

Special Topics in Applications (AIL861)

Artificial Intelligence for Earth Observation

Lecture 11

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Deep Supervision

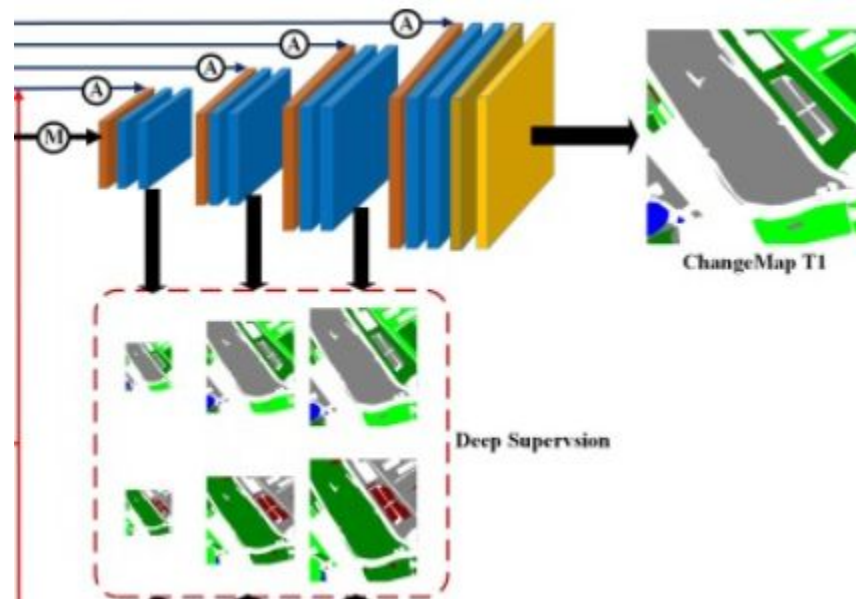


Figure from SCDNET: A novel convolutional network for semantic change detection in high resolution optical remote sensing imagery

Densely Connected Siamese

Unsupervised CD as a way for supervised CD. How?

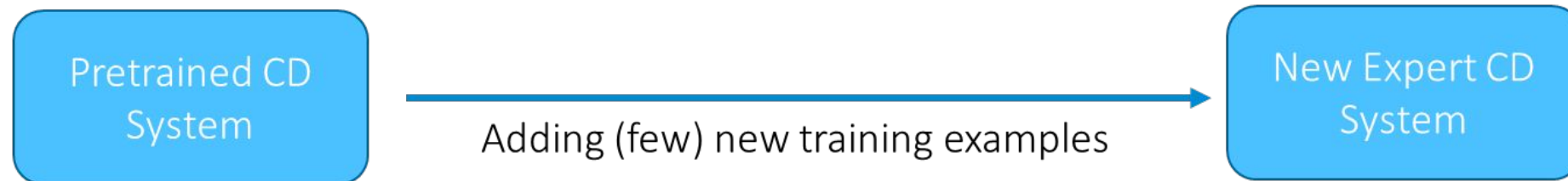
Supervised Multi-Class/Semantic CD

Supervised Multi-Class/Semantic CD

Filtering Specialized Change in a Few-Shot Setting

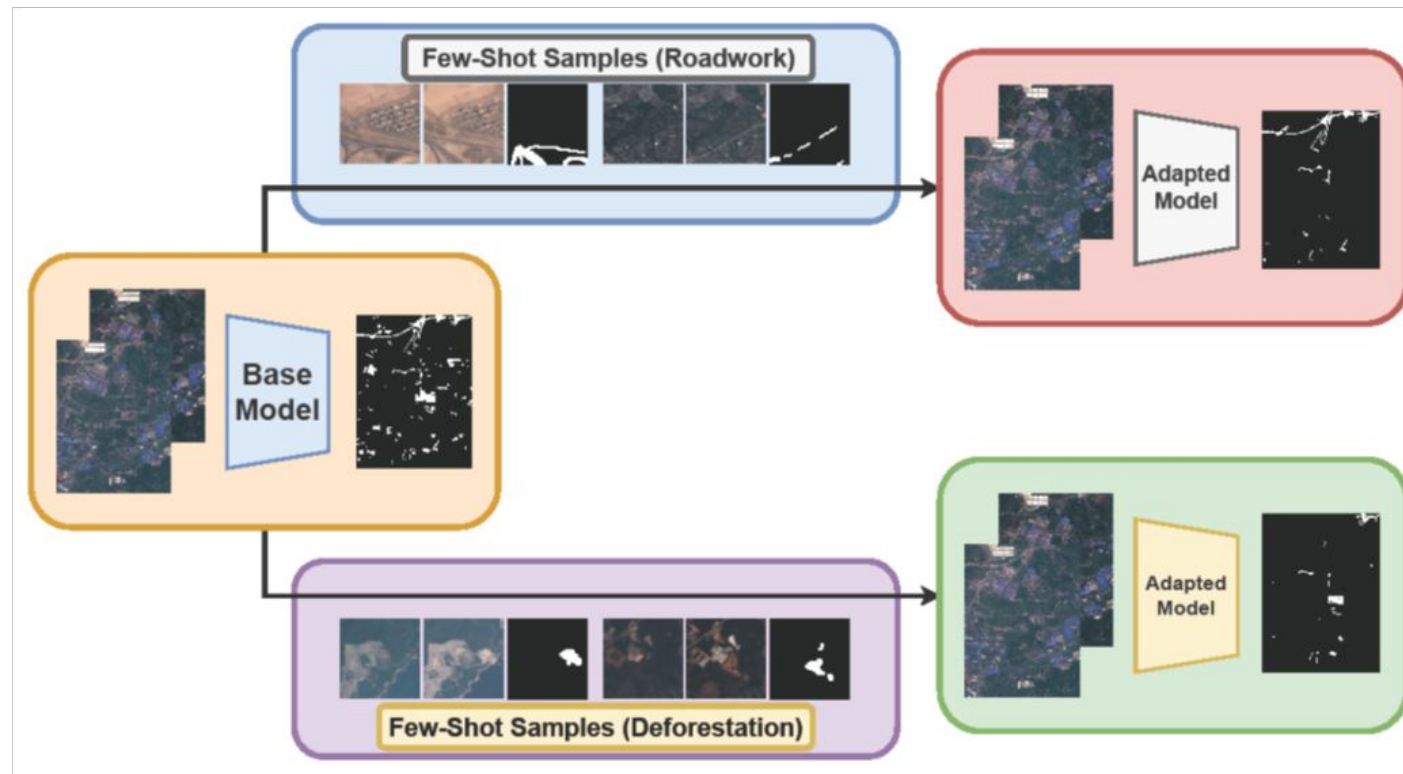
Few Shot Filtering

- We want to have a system that can quickly adapt to a new change detection use case
- “Quickly” \triangleq using only a few labeled examples
- Do this by combining trends in Change Detection and Few-Shot Learning



Few Shot Filtering

- Idea: When we train on an available data source, we will usually learn a very broad definition of *change*
- Without a large amount of additional annotation work, adapt this towards the specific change of interest

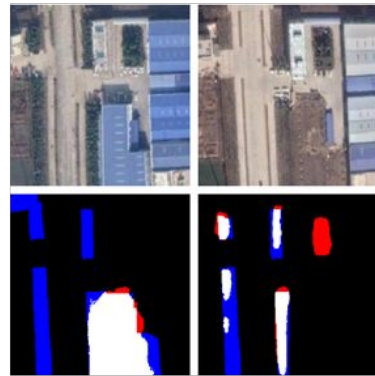
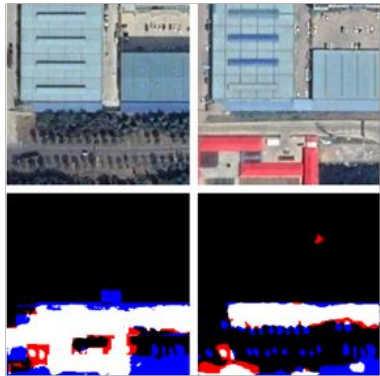


Some hyperparameters

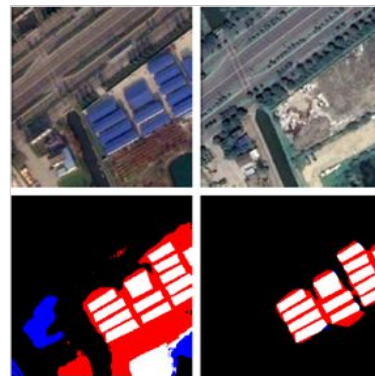
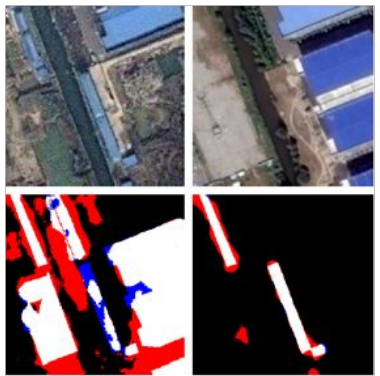
- Change weight
- Number of fine tuning epochs
- Learning rate
- Dropout

Before

After



Removal of trees



Building demolition

Full

Filtered