

# **DRS**

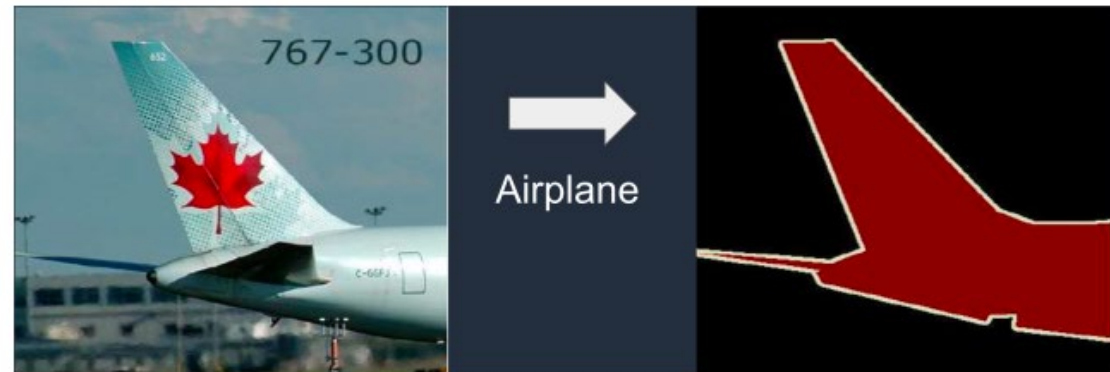
: Discriminative Region Suppression for  
Weakly-Supervised Semantic Segmentation

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## 1. Introduction

### **Weakly-Supervised Segmentation**

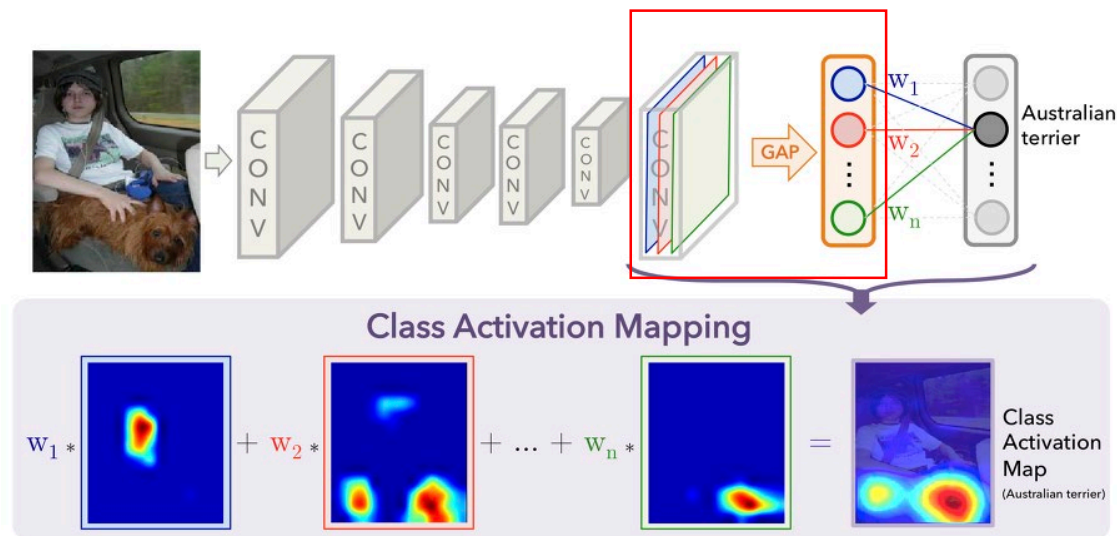
- Segmentation using weakly labeled data  
ex) only with image-level annotations without pixel-level annotations



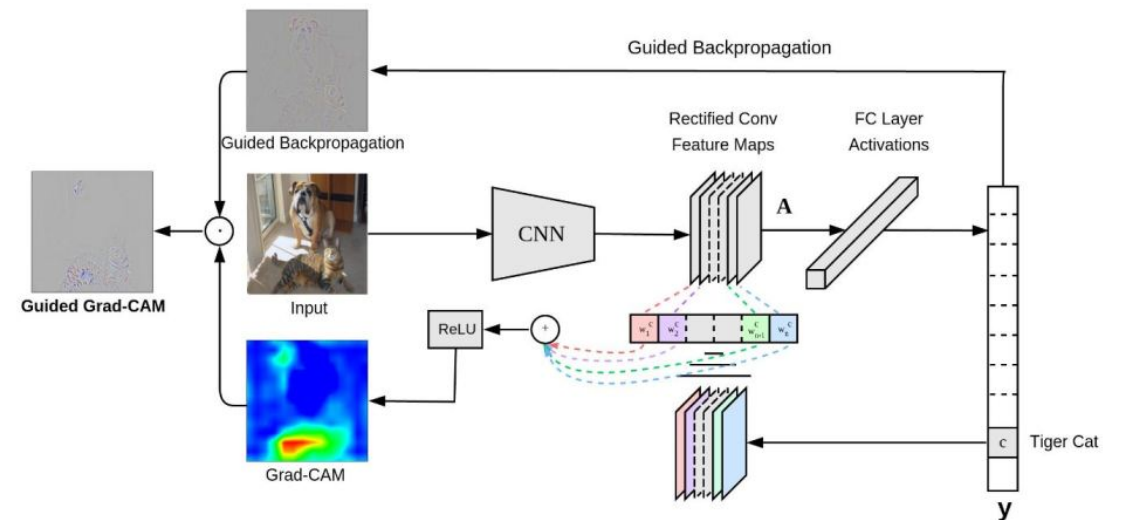
## 1. Introduction

### CAM (Class Activation Map)

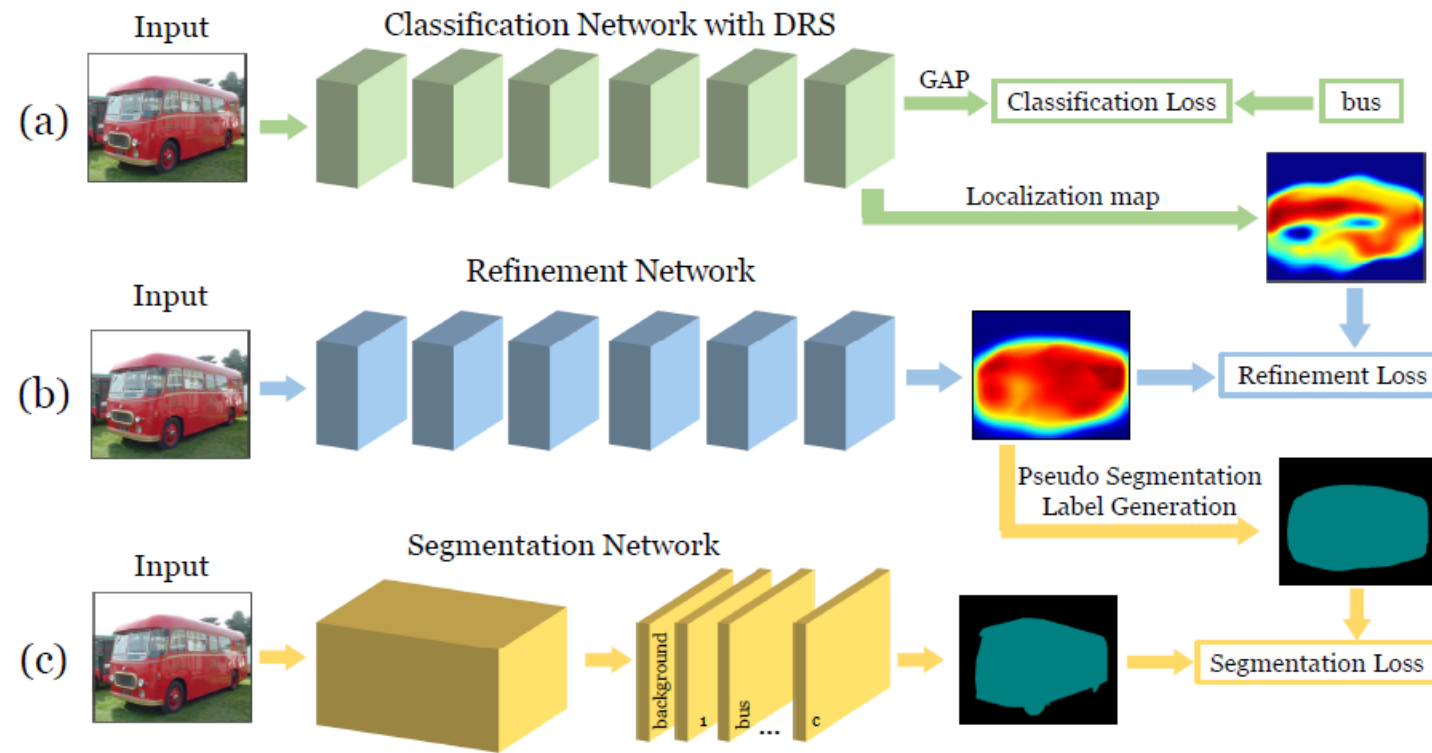
- The contribution of each hidden unit in a neural net to the classification score
- Discriminative region



### Grad-CAM

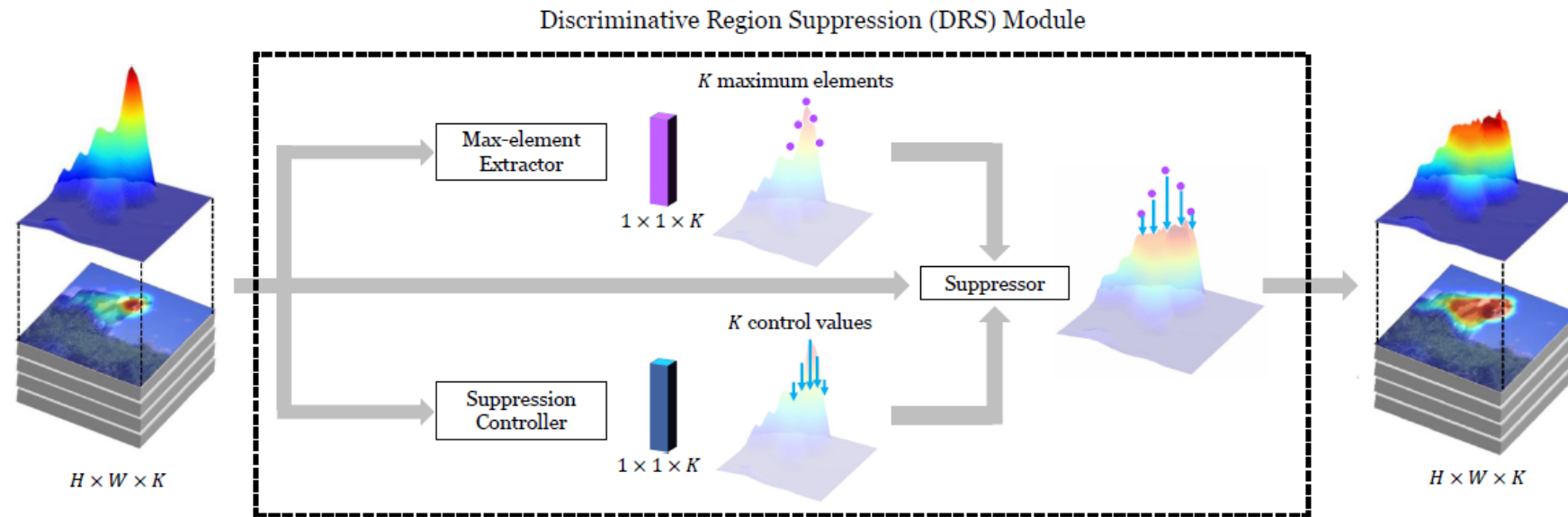


## 2. Method



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### (a) Classification Network with DRS



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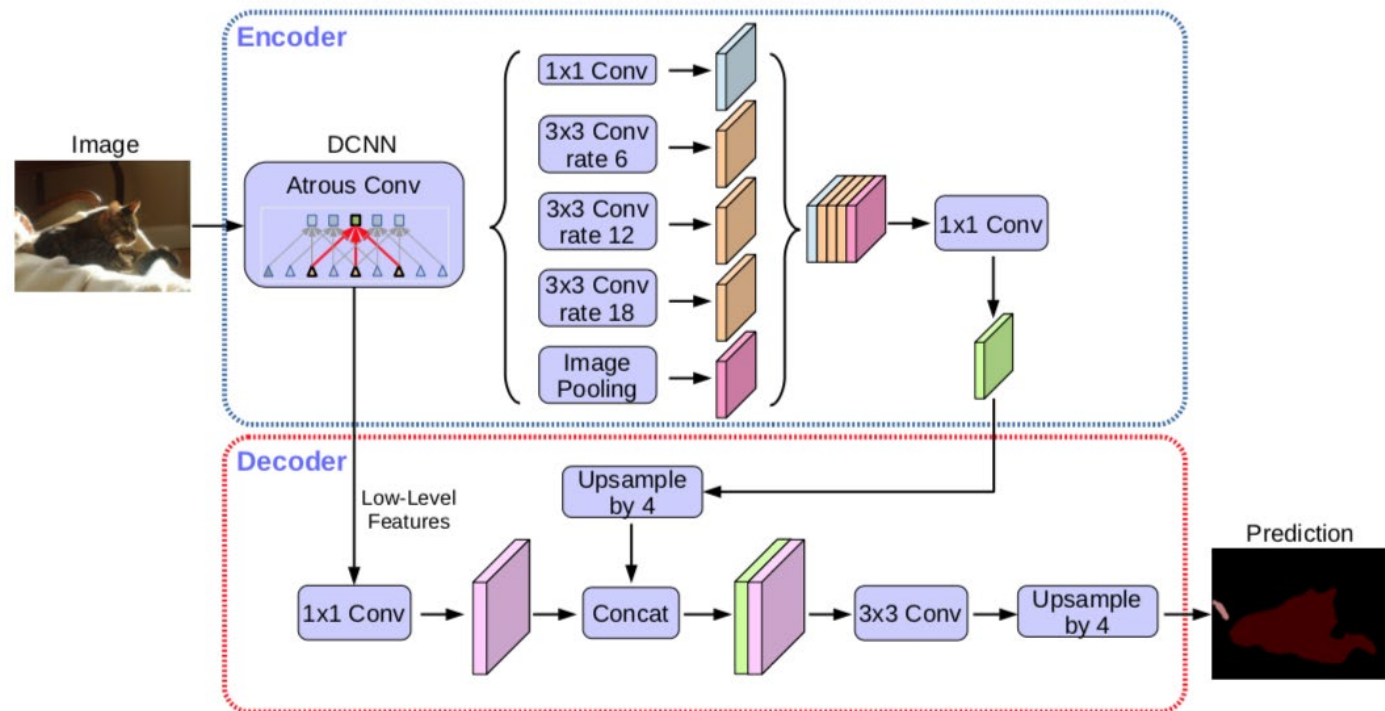
### (b) Refinement Network

- Enhancement of localization map from classification network
- Based on the VGG-16
- MSE loss function

## 2. Method

### (c) Segmentation Network

- Object cues / Background cues from Salient object detection
- DeepLab V3+



### 3. Experiment



3\_image.png



3\_overlay.png



3\_pred.png



3\_target.png

[classification network]

- Image size: 320
- Batch size: 3
- Epoch: 15

[Refinement network]

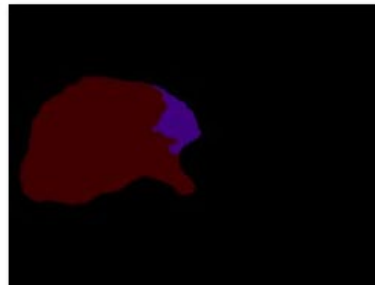
- Image size: 320
- Batch size: 3
- Epoch: 15



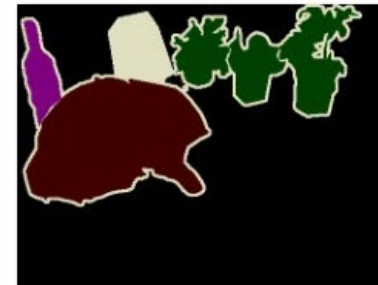
8\_image.png



8\_overlay.png



8\_pred.png



8\_target.png

[Segmentation network]

- Image size: 320
- Batch size: 2
- Epoch: 1



### 3. Experiment



15\_image.png



15\_overlay.png



15\_pred.png



15\_target.png



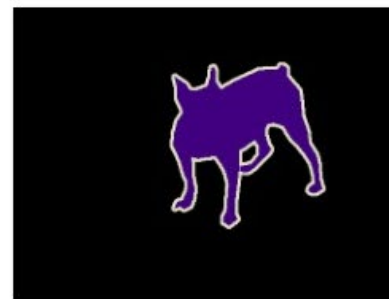
33\_image.png



33\_overlay.png



33\_pred.png



33\_target.png

**Overall Acc: 0.90**

**Mean IOU: 0.65**