Orientation-aware Vehicle Re-identification with Semantics-guided Part Attention Network

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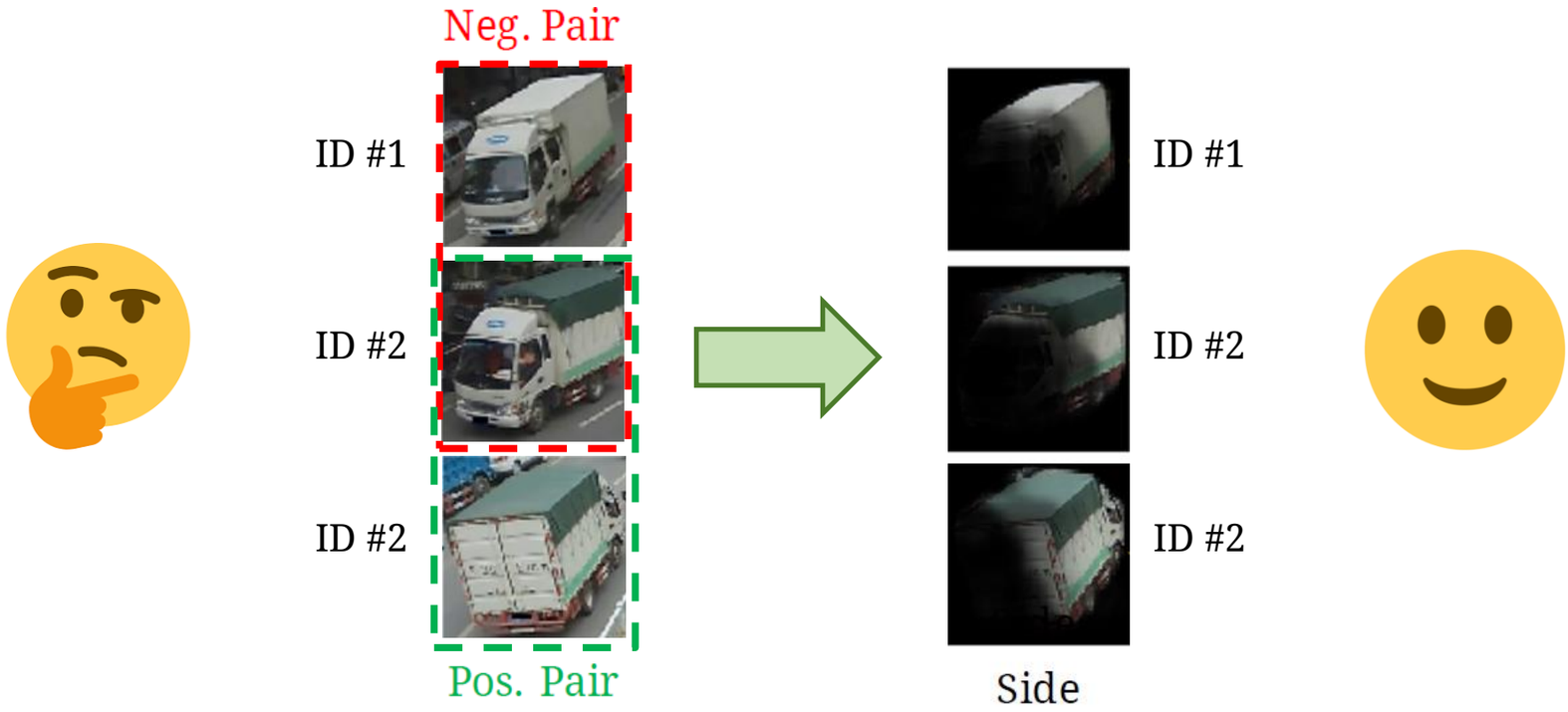
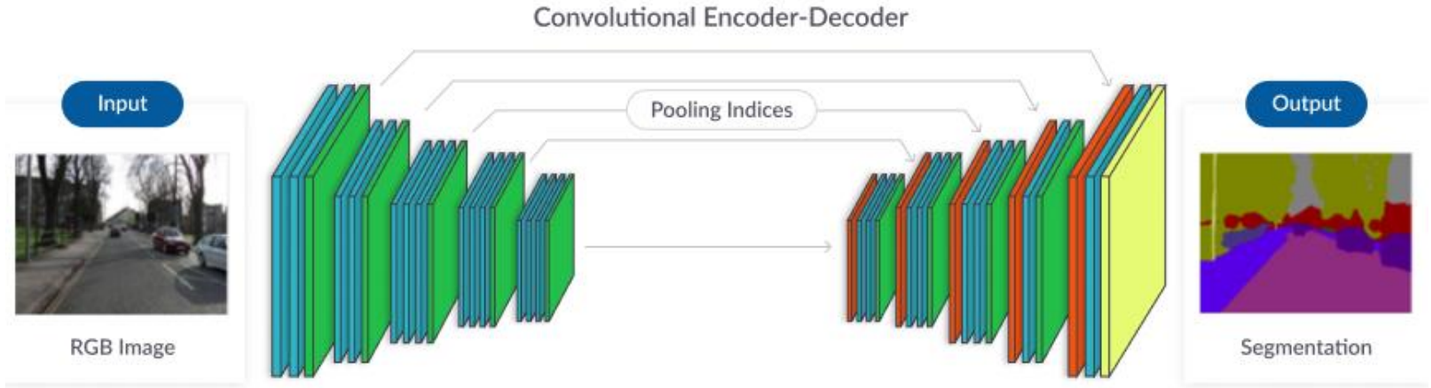
Motivation



1. Generate part attention maps to disentangle global and local feature
2. Emphasize on the co-occurrence part in the compared images

Challenge



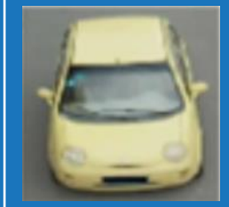
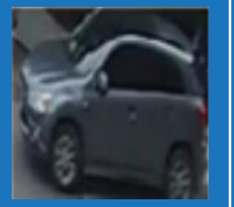
Regular Segmentation Network

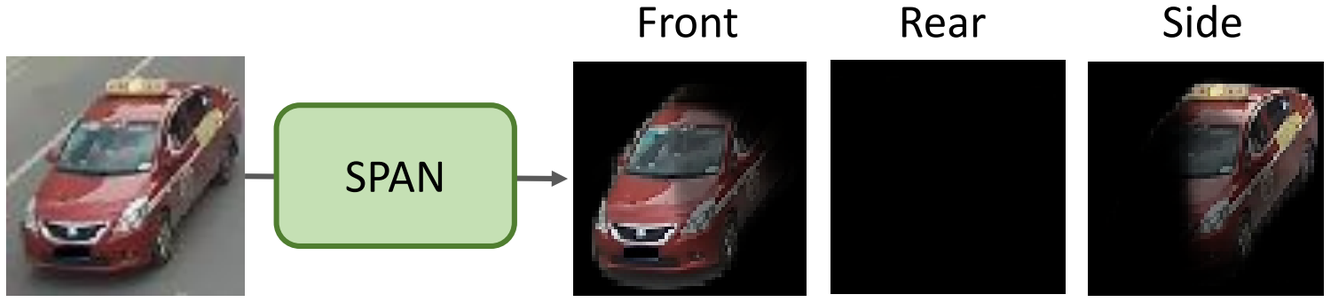
Pixel-level part label [PVEN, CVPR20]

Semantics-guided Part Attention Network

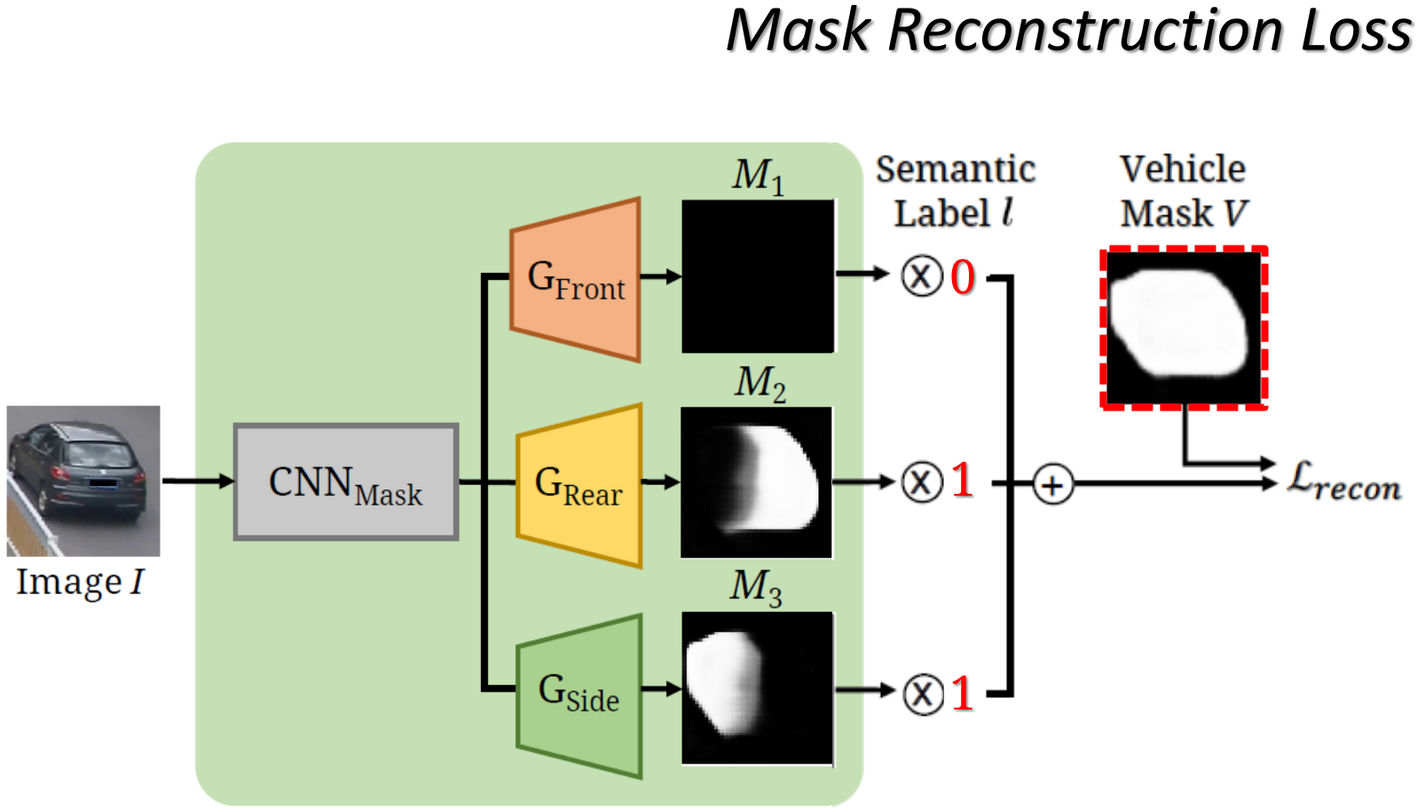
*Only needs **image-level semantic label** to learn to generate the part attention maps.*

Semantics-guided Part Attention Network

Sampled Images							
Semantic labels (Viewpoint)	Front	Front-left	Left	Rear-left	Rear	Rear-right	Right

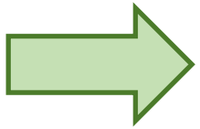


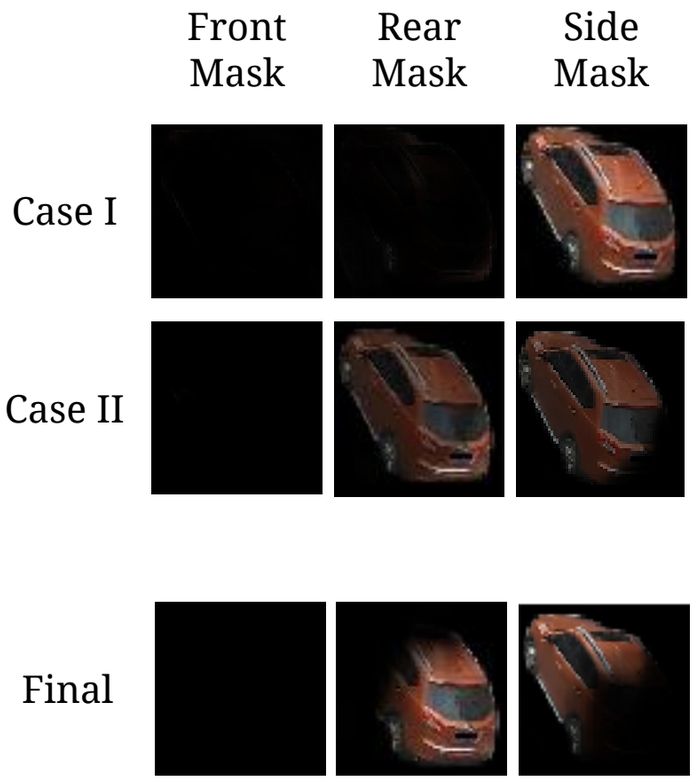
Semantics-guided Part Attention Network



Semantics-guided Part Attention Network

Input Image

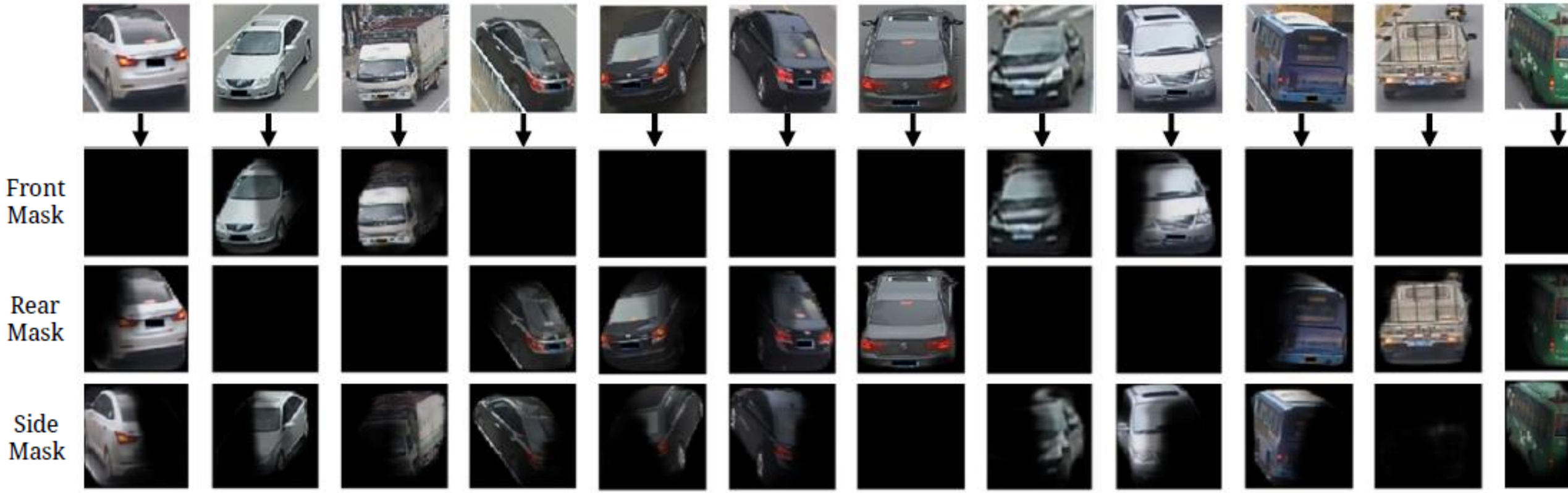




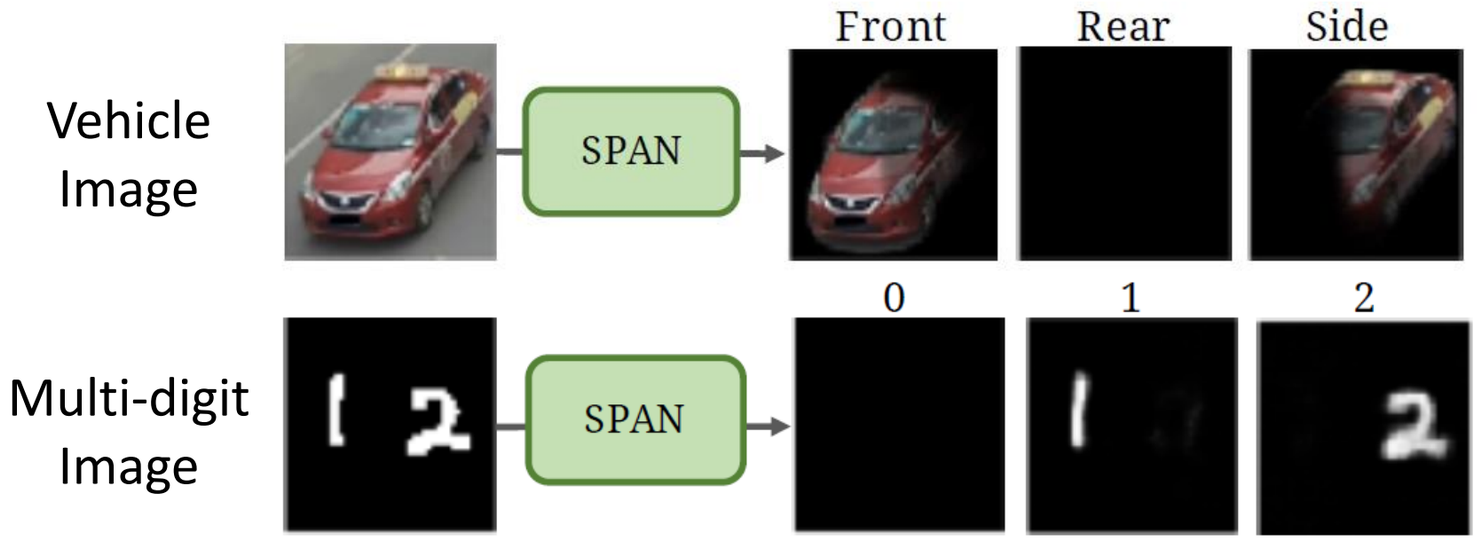
Area Constraint Loss

Spatial Diversity Loss

Semantics-guided Part Attention Network



Semantics-guided Part Attention Network

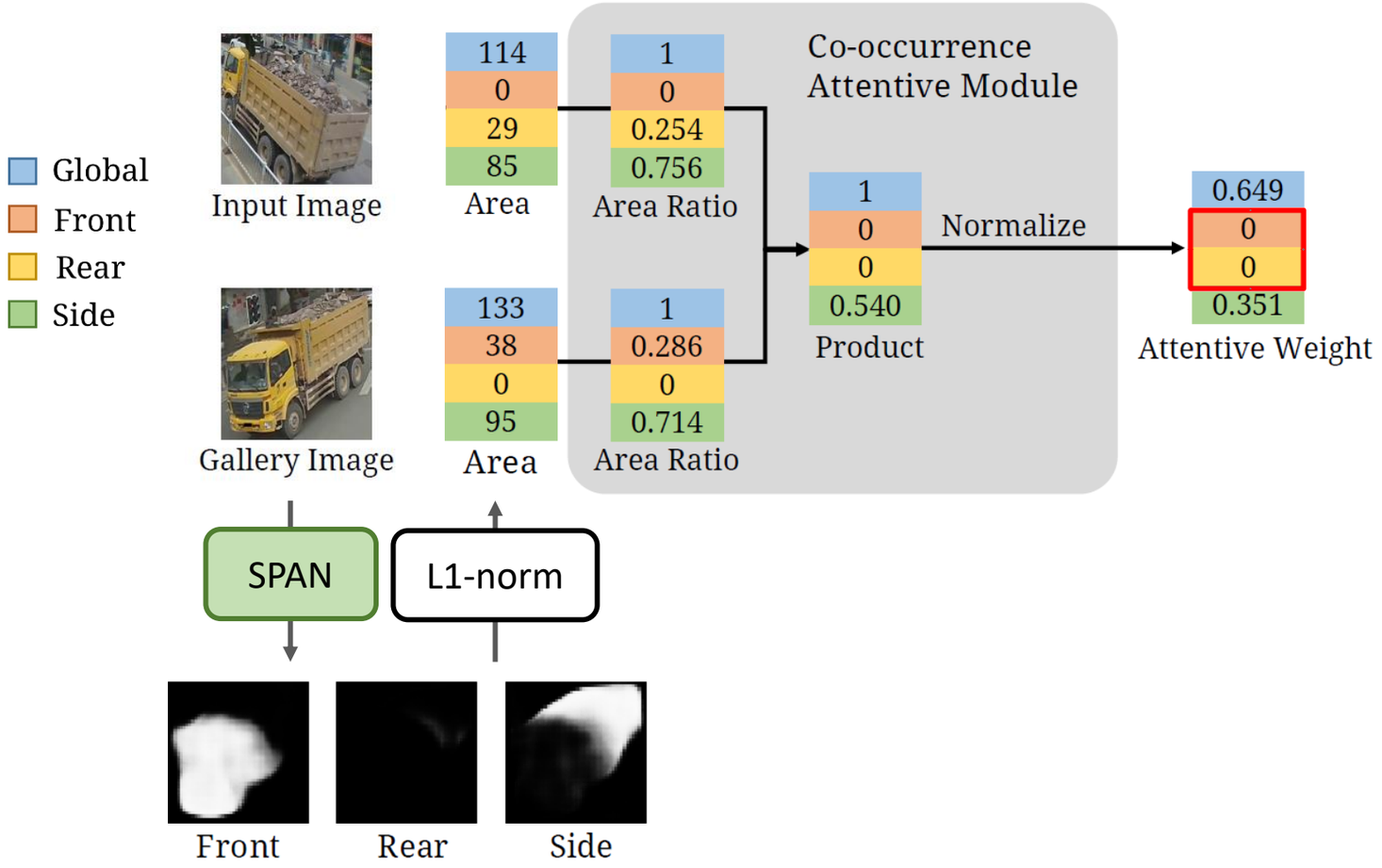


SPAN can be extended to weakly-supervised segmentation.

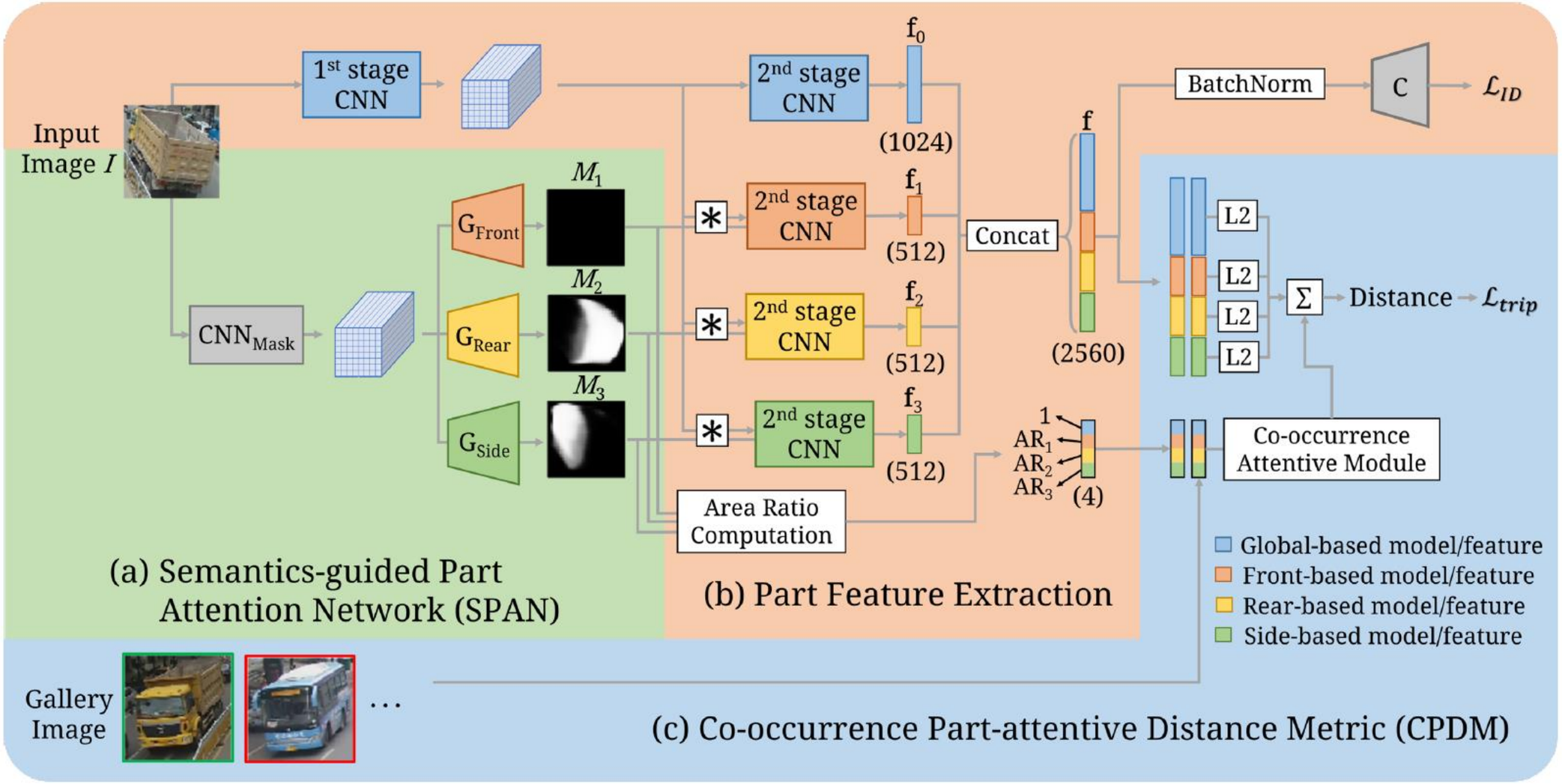
2. Emphasize on the co-occurrence part in the compared images

Co-occurrence Part-attentive Distance Metric

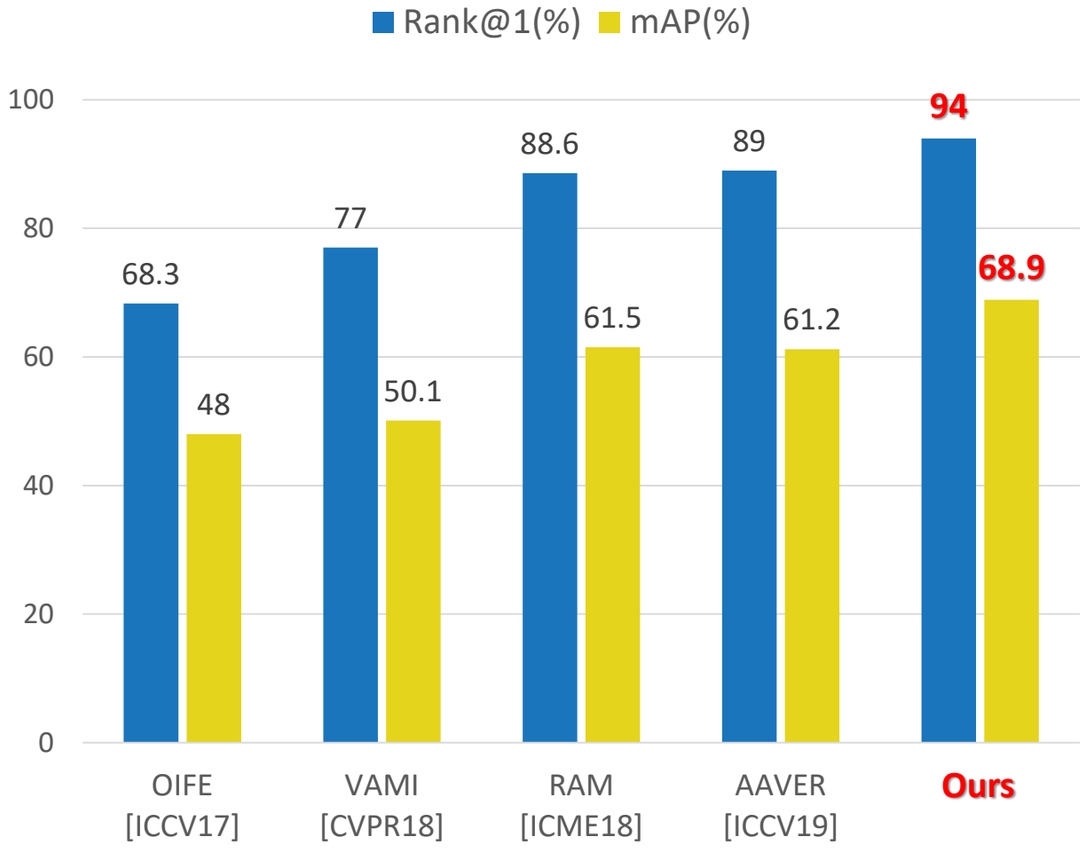
Co-occurrence Part-attentive Distance Metric



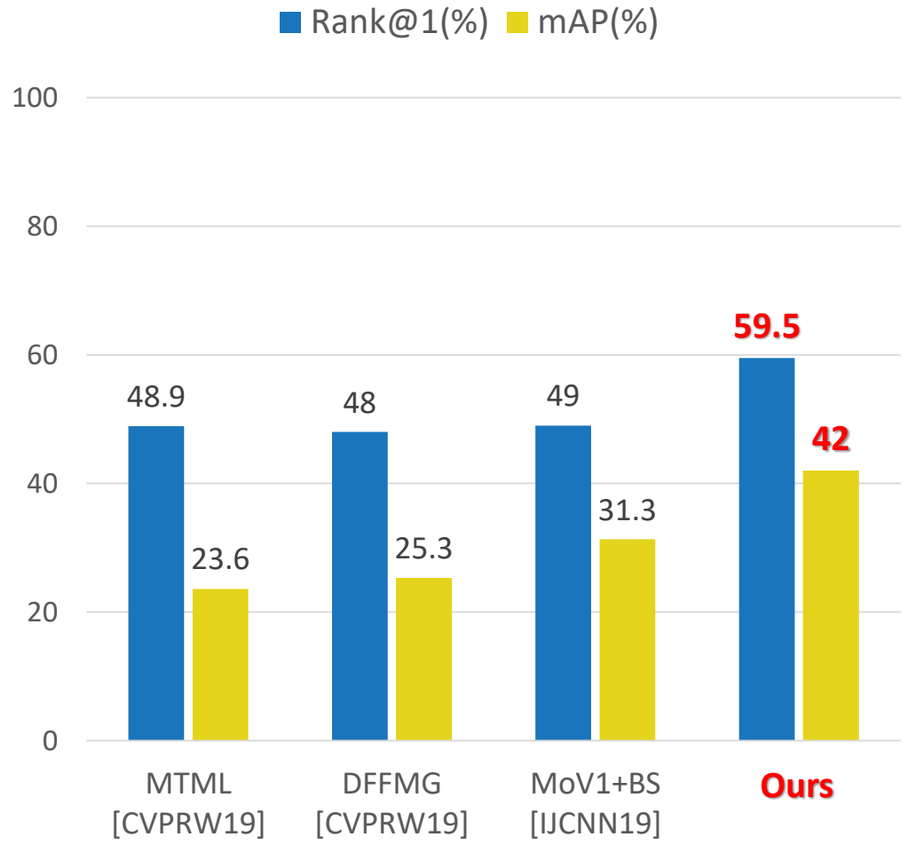
Architecture of proposed framework



Comparison with the State-of-the-Arts



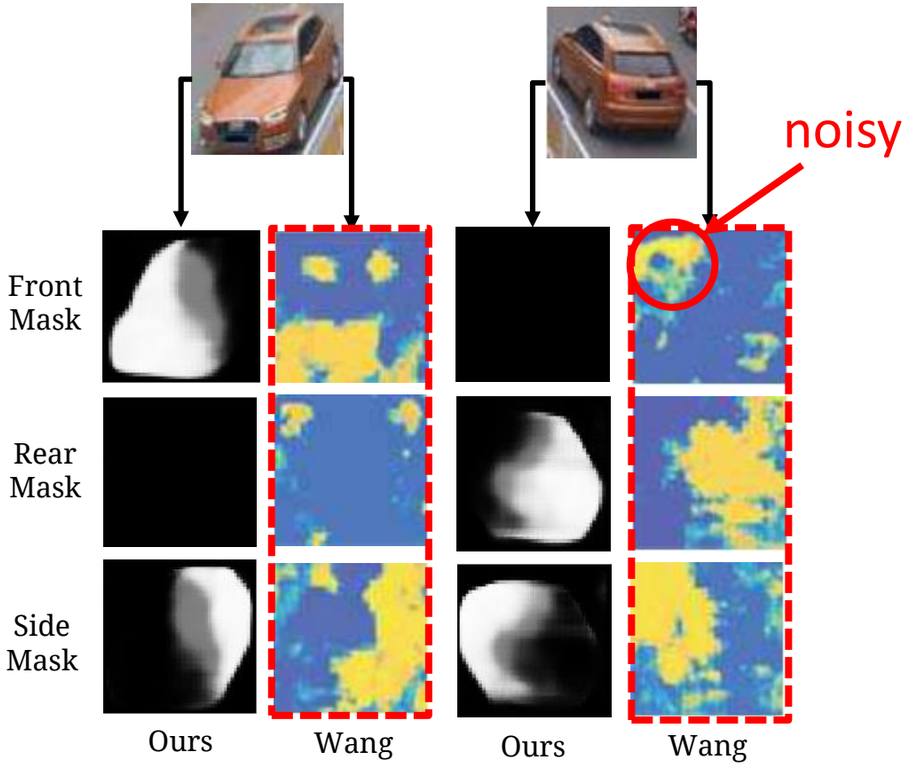
VeRi-776 Dataset



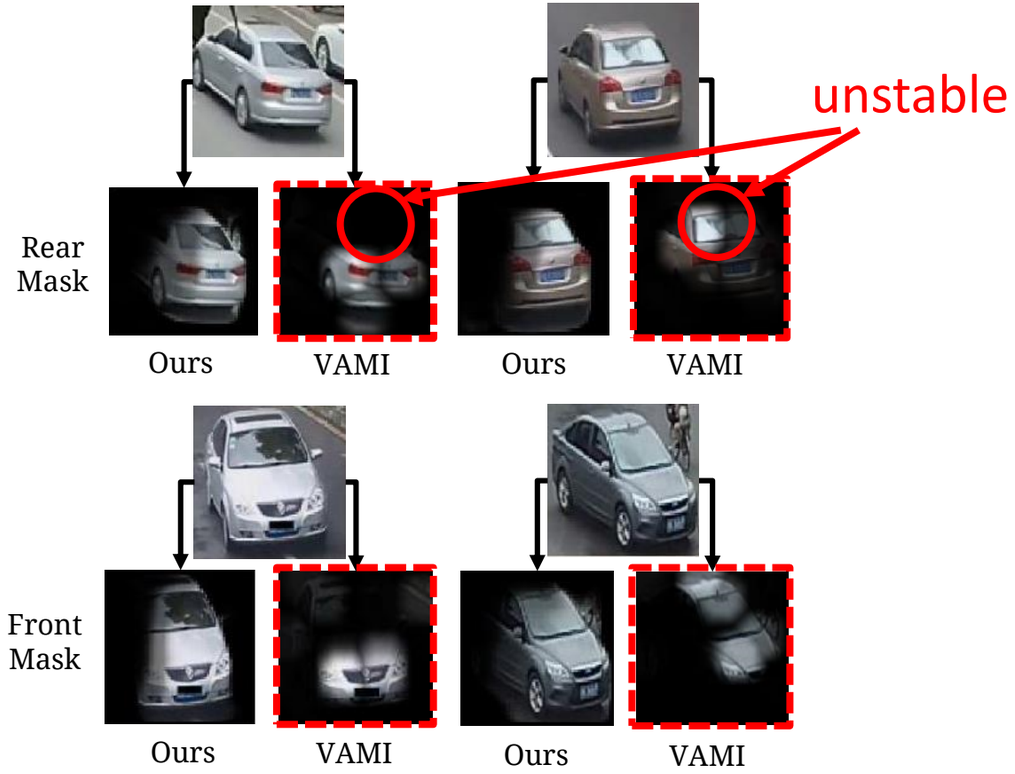
CityFlow-ReID Dataset

Comparison with the State-of-the-Arts

Compare to OIFE [ICCV17]



Compare to VAMI [CVPR18]



*The demonstrated attention maps generated by previous methods are directly from their papers.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