

Supplementary Materials - Horospherical Learning with Smart Prototypes

A Impact of the bias a

The bias a in Equation 6 acts on the radius of each horosphere. We experiment with disabling the bias parameter in order to evaluate its impact on the final performance of the model. As can be seen in Table 7, the bias provides in 2 dimensions an increase in performance but seems to be of less importance for higher dimensions.

Table 7: Performance when enabling or disabling biases during training of horospherical classifiers on the CUB dataset.

Method	Bias	Dimensions			
		2	3	4	50
Horospherical - Smart		34.4±6.2	56.4±0.8	56.0±0.4	57.5±0.2
Horospherical - Smart	✓	38.7±4.3	56.4±1.6	56.3±0.8	56.6±0.6

B Hierarchies

In this section, we include the hierarchies used for positioning prototypes in our experiments on different datasets. For large hierarchies, we do not include the label of nodes for readability purpose. The nodes are coloured following the topological sort of the tree.

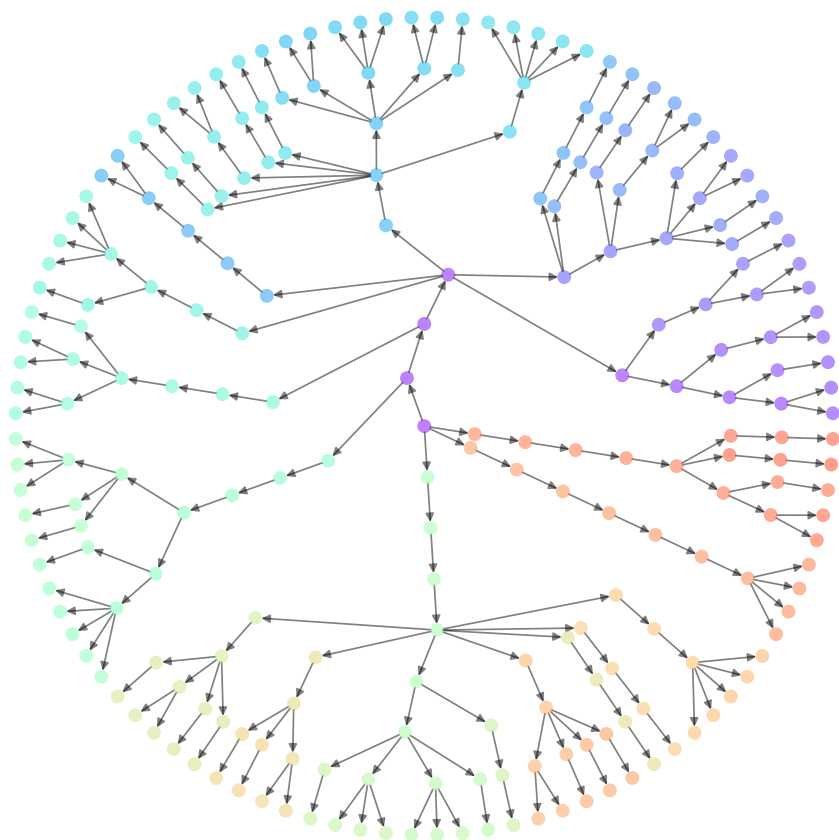


Fig. 8: CIFAR100 Hierarchy.

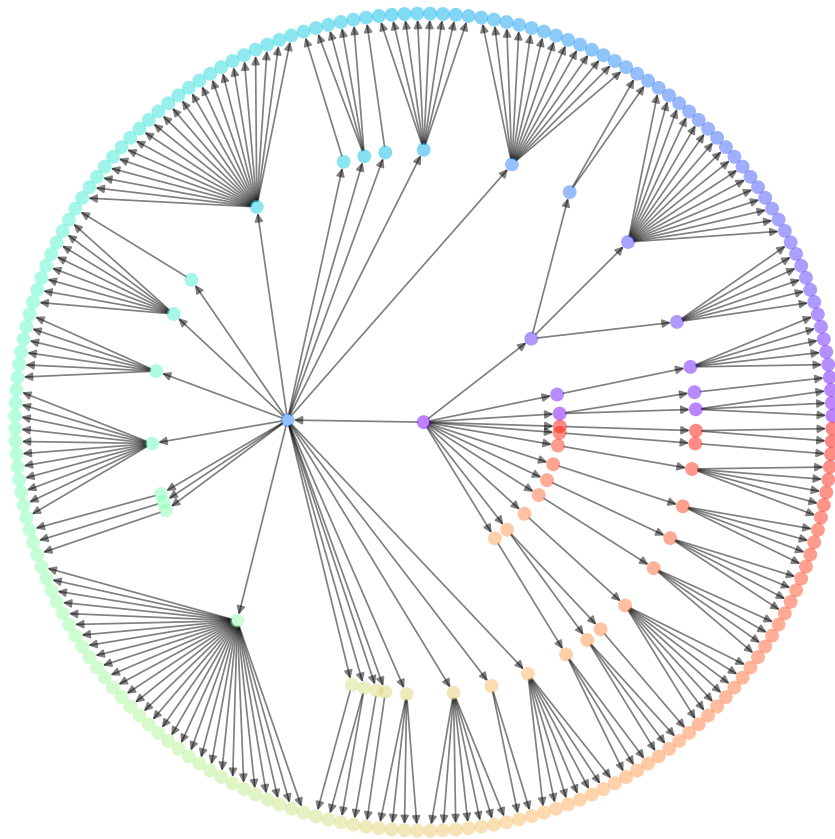


Fig. 9: CUB200 Hierarchy.

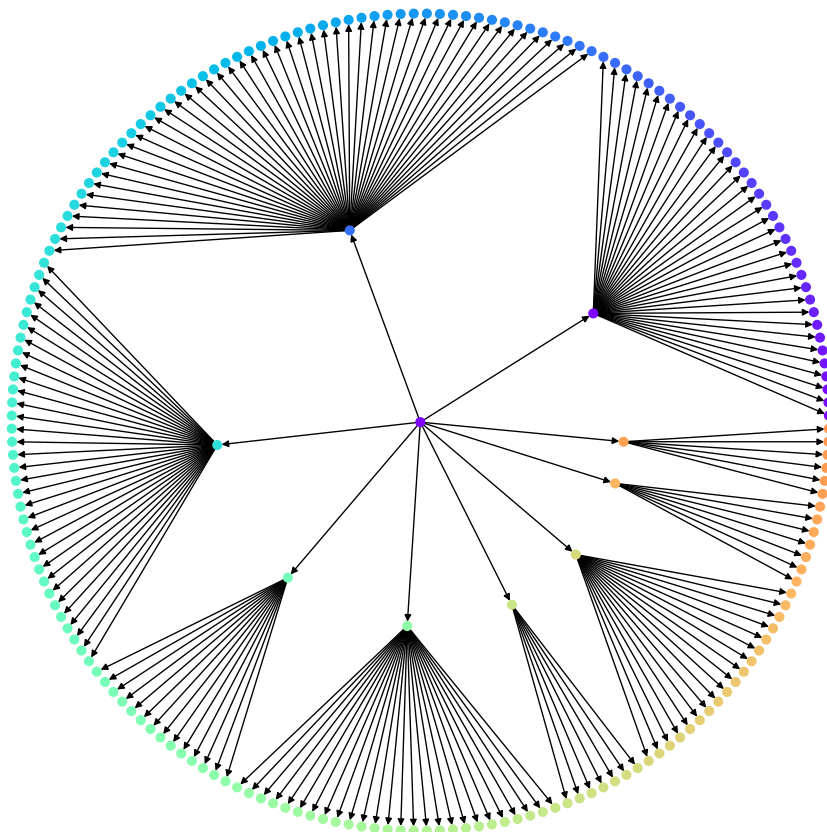


Fig. 10: Stanford Cars Hierarchy.

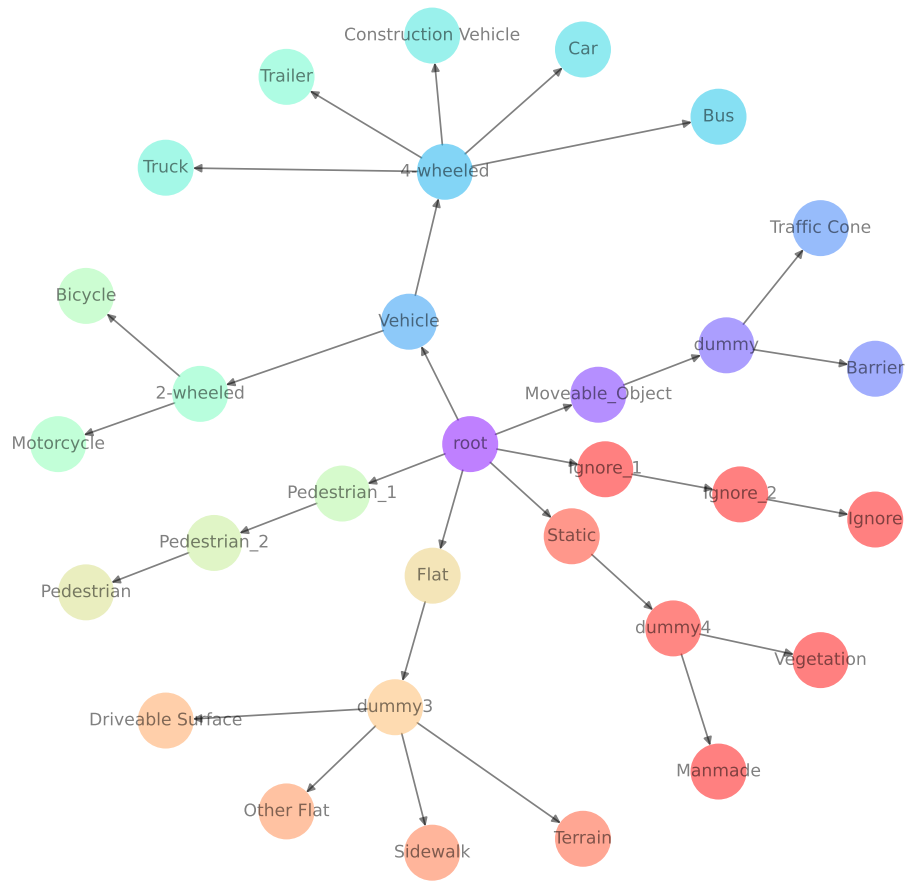


Fig. 11: NuScenes Hierarchy.

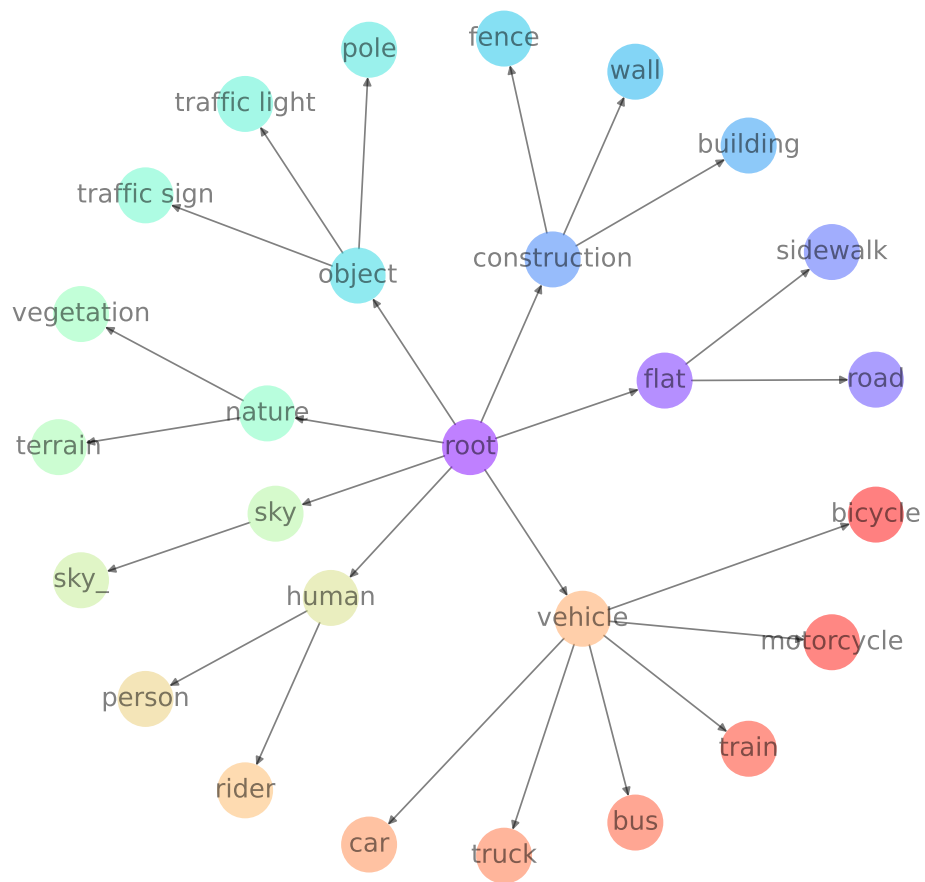


Fig. 12: Cityscapes Hierarchy.