Intersection Prediction from Single 360° Image via Deep Detection of Possible Direction of Travel: Supplementary Material

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1 Qualitative Experimental Results

Some actual examples of input 360° image and prediction results where both our method and Baseline were trained on examples from all areas were illustrated in Fig. 1. In this figure, we put the input 360° image, manually annotated ground truth label and predicted labels by our method and Baseline. We observe that our method correctly identified intersections in many challenging cases including the ambiguous omnidirectional intersection in Campus and the cluttered shopping street in Downtown that Baseline failed to predict. Note that we observed that Baseline tended to assign false intersection label to many non-intersection frames (*i.e.*, high false positive rate) even though the number of positive examples is much smaller than the negative examples and this indicates that directly identifying intersection from large FoV 360° image is really challenging problem than simply detecting the PDoT in the view-centered normal perspective image. However, we observed some failure cases as was shown at the bottom row in Fig. 1. We analyzed each result in detail. In false negative examples, we found that our method could not identify the intersection in Campus because only two PDoTs were detected from this image. For Downtown example, it happened that the pedestrians were detected as obstacles and PDoTs were not detected in those directions. In false positive cases, in Suburb example, due to the wide width of the sidewalk where the observer is walking, the PDoT was detected in directions other than straight ahead and backward. In Chinatown area, the fence of the parking lot was not recognized as an obstacle, and it was recognized as being able to proceed in the direction of the parking lot.

Area	Campus	Downtown	Suburb	Chinatown
GT	True	True	True	True
Baseline	False	False	False	False
Ours	True	True	True	True

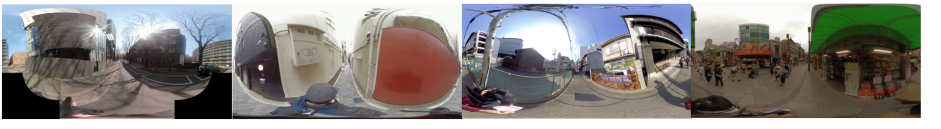

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Figure 1: Examples of intersection identification results for different areas. "True" means that the image was classified an intersection, "False" means that it was classified as non-intersection. The first row shows the result about the intersection images and the second row shows the result about non-intersection images. The third row shows examples that the proposed method failed to assign correct intersection labels. Please see detailed analysis in Sec. 5.2.