Ground-to-Aerial Image Geo-Localization With a Hard Exemplar Reweighting Triplet Loss
Supplemental Material

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1. Additional Qualitative Results

For a given ground-view query image, our approach retrieve the top 1% closest satellite images in the reference database according to their feature distances. Specifically, CNN features of ground-view query images and satellite images are extracted from two different arms of Siam-FCANet18, and the distances between CNN features are used to retrieve images from the reference database.

Figure 1 and Figure 2 show the top 5 and top 8 ranking results for several ground-view queries of the CVUSA [2] and VH [1] datasets, respectively. Retrieved satellite images are listed from left to right according to their ranking orders generated by our geo-localization approach. The correctly matched satellite image for each ground-view query image is bounded by a green box. It can be seen that, although the appearance differences between ground-view query images and their corresponding satellite images are significant,

Figure 1. Examples of ranking results achieved on the CVUSA dataset [2].

Figure 2. Examples of ranking results achieved on the VH dataset [1].

they can be correctly matched. That means our network can learn discriminative and robust feature representations for cross-view image retrieval. It can also be observed that the top 5 results in Fig. 1 have very similar structures. For example, all retrieved images in the first row have a T-junction structure, while all retrieved images in the bottom row have a straight road.

References

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