

Title: Cross View Localisation using a Shared Weight Siamese Transformer Network

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Abstract:

Cross view localisation (CVL) has received significant attention in recent years due to its potential applications in robotics and autonomous driving. However, research in the area has relied heavily on panoramic images to improve recall performance. In this paper, we focus on the CVL task where ground level images are limited to a 90° field-of-view (FoV). Extensive testing on multiple network architectures is performed to quantify the impact of the loss function and the effect of weight sharing in Siamese Networks for CVL tasks. Additionally, we introduce the Cross View Shared Transformer (CVST) network, a novel Siamese Network architecture employing shared weights capable of extracting features from different view points without the aid of external projection. CVST demonstrates competitive performance against state-of-the-art approaches on a real-world image retrieval benchmark, while reducing the complexity of the Siamese Network