

# Possible Enhancements

## Overlapping Patches for Improved Keypoint Detection

- **Current Problem:** The current approach splits the high-resolution satellite images into non-overlapping patches. This introduces the risk of losing important features that lie near the boundaries of the patches, which may result in fewer detected keypoints or incomplete matches.
- **Improvement:** Introduce overlapping regions between adjacent patches. The idea is to ensure that features near the edges of one patch are captured in the neighboring patches, leading to more consistent and robust keypoint matching across the entire image. This overlap ensures that no critical features are missed due to patch boundaries.

## Training LoFTR on Labeled In-Domain Dataset

- **Current Problem:** LoFTR is currently being used with a pretrained model (e.g., the "outdoor" model). This model is trained on general image data, which may not fully capture the specific characteristics of satellite imagery, such as seasonal changes, different lighting conditions, or specific textures and patterns present in satellite images.
- **Improvement:** Train LoFTR on a **labeled in-domain dataset** that specifically contains satellite imagery. This domain-specific training will enable LoFTR to better recognize and match the unique features in satellite images, leading to improved keypoint matching performance.