# Report on Image Stitching and Enhancement

This project focuses on creating a seamless panorama from multiple images and enhancing the final result using advanced computational techniques. The process begins by resizing and preprocessing the images to ensure consistency, followed by feature detection using ORB (Oriented FAST and Rotated BRIEF) to identify keypoints across overlapping regions. These features are matched using robust algorithms, and a homography transformation is computed to align and stitch the images sequentially. To handle the challenges of large panorama dimensions, a scaling mechanism was implemented to dynamically adjust the size, ensuring memory efficiency without compromising quality.

To enhance the final panorama, we utilized the SwinIR (Swin Transformer for Image Restoration) model, a state-of-the-art deep learning approach. This model was employed to improve the visual quality of the stitched panorama by addressing artifacts, sharpening details, and enhancing overall clarity. Additionally, a systematic approach was employed to remove unnecessary black borders from the panorama. By analyzing pixel intensity gradients and detecting areas with consistent black regions, the cropping was automated to retain only the meaningful portions of the image. The result is a high-quality, visually refined panorama that effectively showcases the combined scene.