

# Panorama-Stitching-and-Control

Service that performs various functions after creating panoramic image using image stitching

## Pre-requisites

- C++
- OpenCV 4.4.0

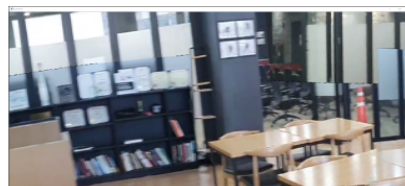
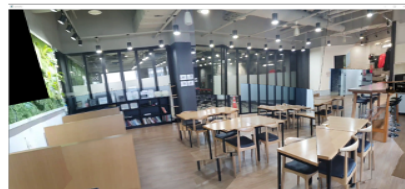
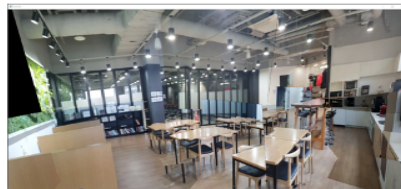
## Algorithm

1. Input is video file or real-time camera
2. Select images based on specific criteria
3. Project the images to desired coordinate system(ex. cylindrical, spherical...)
4. Predict the direction of movement of camera by analyzing the characteristics between images
5. Find the homography matrix from images by using various key point matching algorithms(ex. SIFT, AKAZE, ORB...)
6. Stitch the images based on spatial center
7. Blend the stitched images by using blending techniques(ex. linear, laplacian...)
8. Crop the unnecessary area of stitched image
9. Output is the panoramic image
10. Do various functions with panoramic image
  - zoomed image
  - image with template matching
  - image with homography matching
  - video with homography matching

## Result

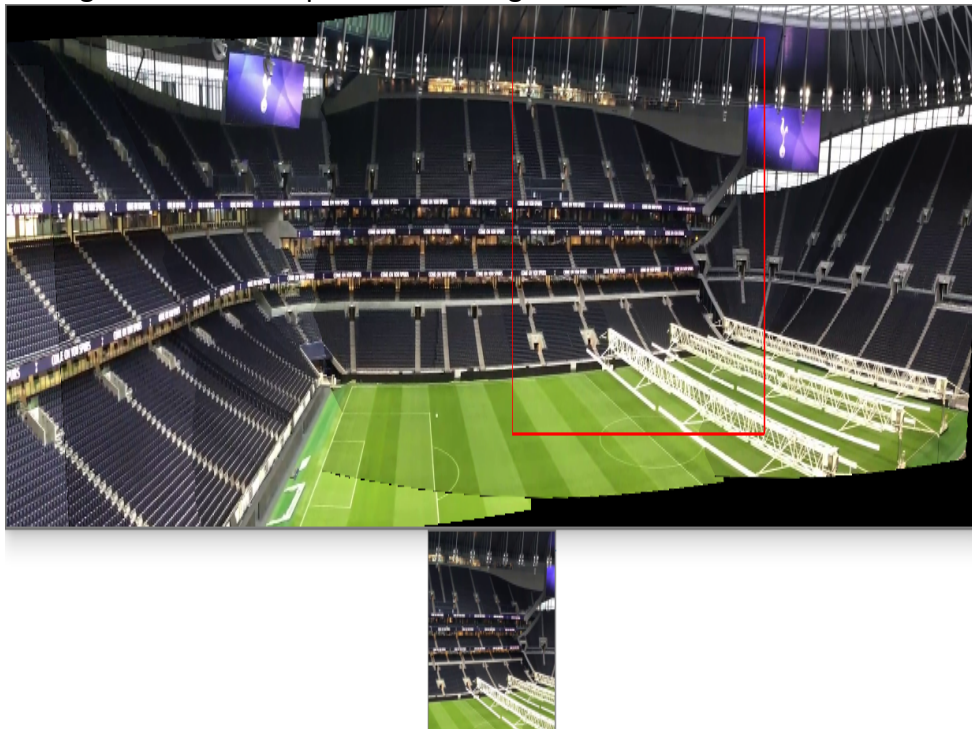
< mode 1. Zooming >

- set the position of desired point
- zoom in and out according to scale



< mode 2. Template Matching >

- target image is based on panoramic image



< mode 3 & 4. Homography Matching >

- target image is based on input video file or camera

