Image Mosaicing SIFT (Scale-invariant feature transform**) Matching**
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Drive Link： https://drive.google.com/drive/folders/1_fVbsAIJ7yBFUvn271DTO19KyQ4Kqap9?usp=sharing

Image mosaicing is a well known area of research in the Computer Vision community with many open-source datasets also available for this purpose, for example adobe panorama dataset. Image stitching is a process in which a common region overlaps between a sequence of images to increase the information present in the scene. The final output is dependent on various factors such as how effectively invariant features are chosen and matched correctly. Literature review shows using SIFT (Scale-invariant feature transform) like methods is a common technique to get efficient matches. SIFT has a strong advantage over conventional feature matching such as Harris Corner etc that it provides scale space and rotation independent descriptors.

Basic pipeline of this project is to extract scale space independent features (SIFT, SURF etc.), to obtain good enough matches for nearest neighbours (FLann, Fast Library for Approximate Nearest Neighbors), to estimate Homography and finally apply perspective transformation to warp images in order to create a seamless mosaic.

Sift features effectively encodes neighbourhood information, a 128 dimensional feature vector descriptor.

Algorithm

Feature extraction → Matching → Homography → Warping => Resultant image
(SIFT) (KNearest Neighbours) (Perspective Transformation)

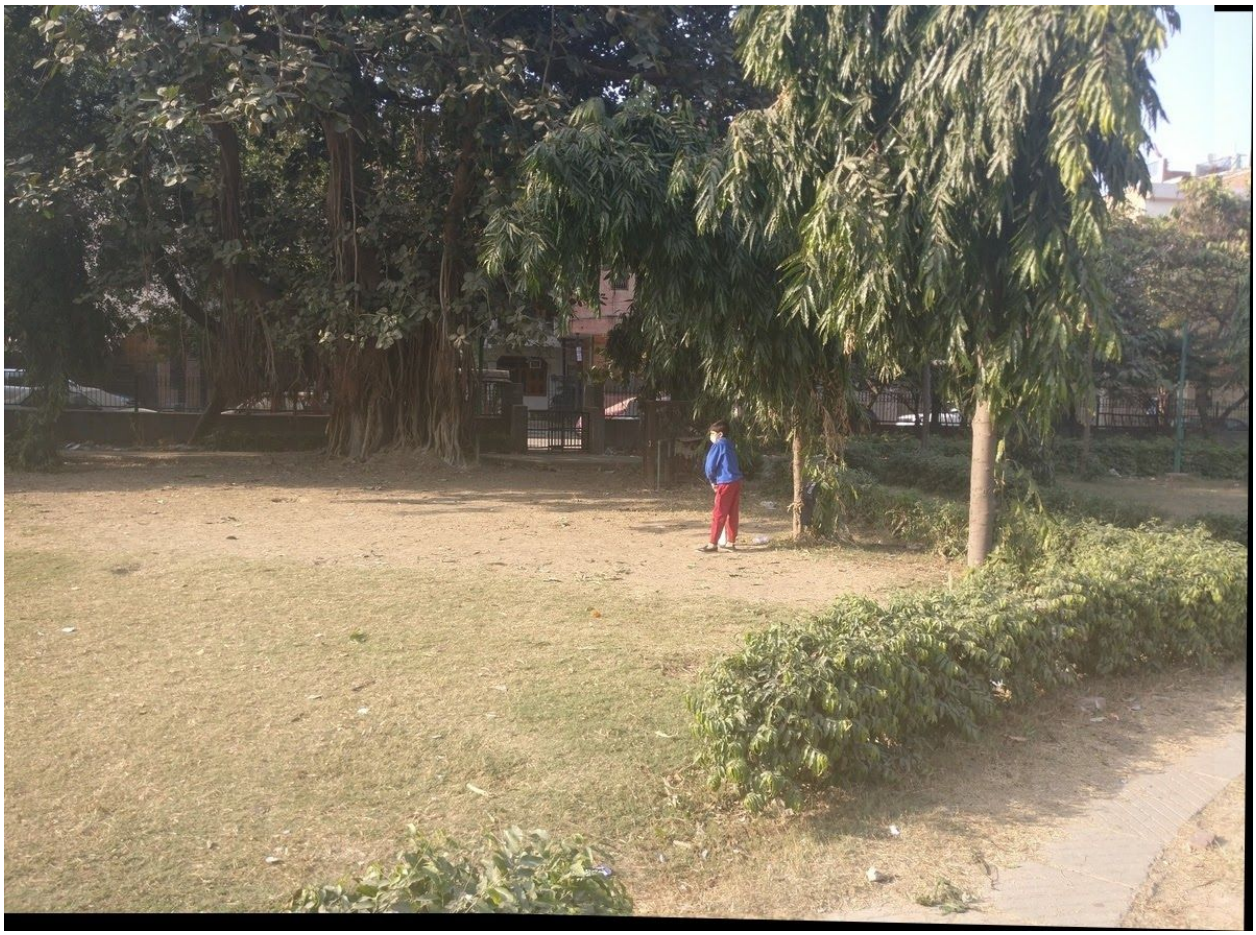
Possible failure cases : In ultrawide angled images/far off images sift descriptor is evaluated at different scales causing minute details to be missed resulting in incorrect matches

Results are provided in 3 classes :

- **Given dataset**
- **Clicked images and**
- **Open source Adobe dataset (which includes failure cases)**

- **Given dataset**

- **Clicked images**



- **Adobe Dataset images**