Assignment - 4 Report

Submitted By: Kshitij Srivastava (MT18099)

Question 1: Computer Vision Researchers and their contributions

Senior Researchers

Name	**Contribution**
Anil K. Jain	Markov Random Field
Andrew Zisserman	Visual reconstruction.
Jitendra Malik	Anisotropic diffusion
Takeo Kanade	Lucas–Kanade method
Luc Van Gool	Speeded-up robust features (SURF)
David Lowe	Scale-invariant Feature Transform (SIFT)
Mubarak Shah	UAV video analysis
Shree Nayar	Recognition of 3-D objects from appearance
Jean Ponce	Spatial pyramid matching
Peter Meer	Mean shift clustering

Young Researchers

Name	**Contribution**
Ross Girshick	Faster RCNN
Li Fei-Fei	ImageNet Dataset
Navneet Dalal	Histograms of oriented gradients for human detection
Piotr Dollár	Microsoft coco: Common objects in context
Visvanathan Ramesh	Mean shift
Sanja Fidler	Object detection and semantic segmentation
Silvio Savarese	Human action recognition
Aditya Khosla	Imagenet
Pushmeet Kohli	Kinectfusion
Pierre Sermanet	Going deeper with convolutions

<u>Question 3</u>: SIFT Keypoint Matching

Part (a): Keypoint matching

Blue markers: False key-points

Green markers: True key-points

Part (b): Homography matrices

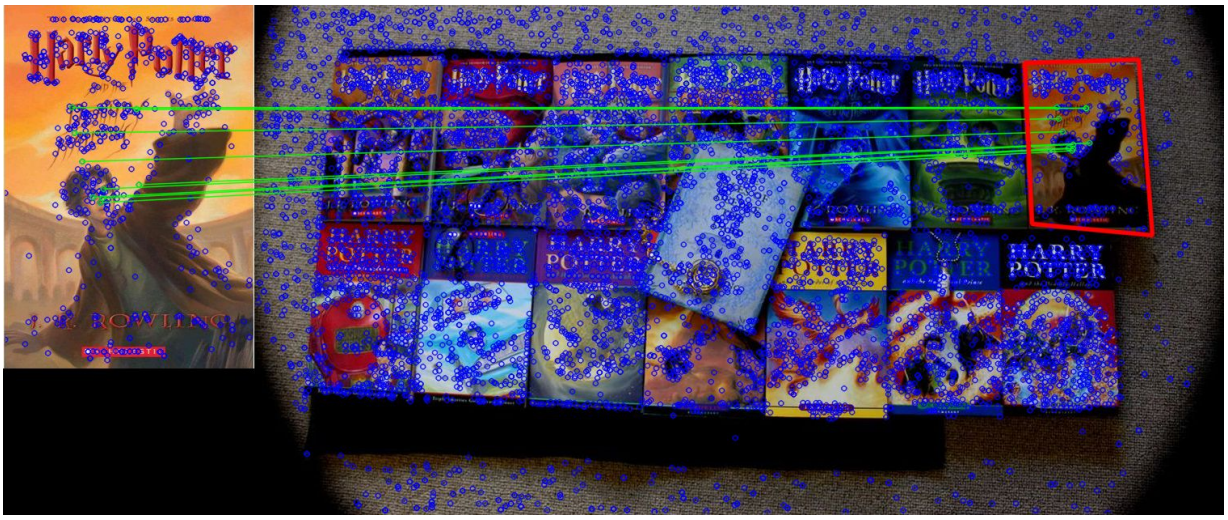
test1.jpeg

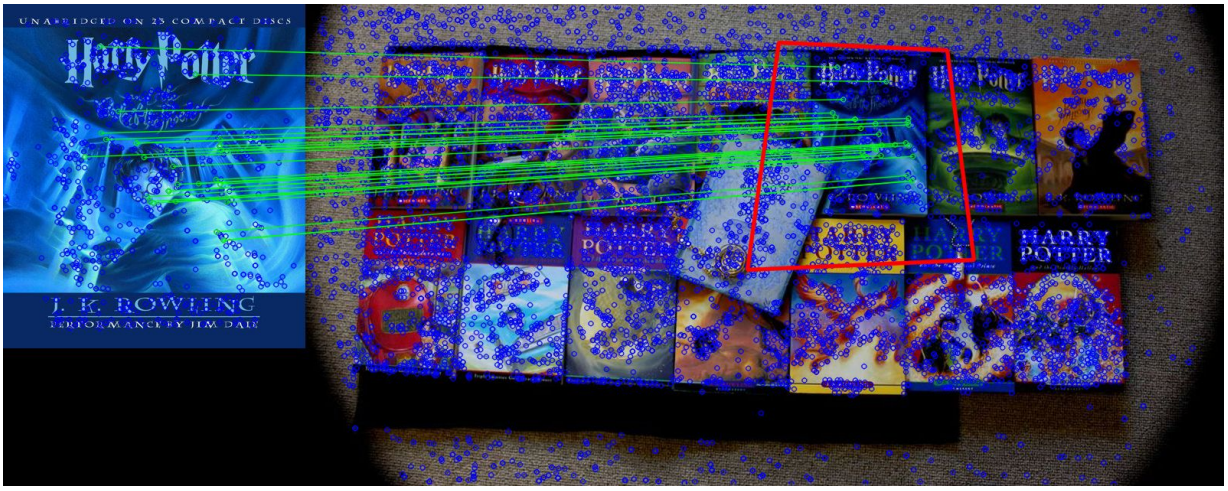
5.67361295e-01	-1.23262142e-01	9.50914216e+02
2.74521654e-02	4.25137565e-01	6.84656903e+01
1.12489726e-04	-1.48028152e-04	1.00000000e+00

test2.jpeg

7.81598558e-01	-3.89938343e-01	6.14996099e+02
4.96134007e-02	4.83770093e-01	4.62151340e+01
2.49355730e-04	-5.30754214e-04	1.00000000e+00

Part (c): Bounding boxes for test images





<u>Question 4</u>: Panoramic image stitching

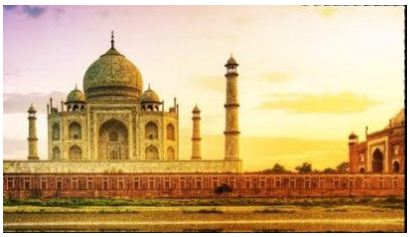
Steps:

- Find out the key-points between two images
- Calculate the homography
- Transform the image using the key-points (cv2.perspectiveTransform)
- Warp the two images to obtain the final result image

Input:

 1a.jpg	 1b.jpg	 1c.jpg

- Stitched together 1a.jpg and 1b.jpg
- Stitched together 1b.jpg and 1c.jpg

	
 pano1	 pano2

- Stitched together pano1 and pano2 to obtain the final panoramic image.