

**Assignment 3 Report**  
**Muhammad Usama(MSCS2062)**  
**Task # 01**  
**Recover Transformation**

**Experiment # 01**

**Dataset Image : Arfa1**

**Dataset Image : Arfa2**

**Result Image:Arfa\_transformed**

**Matrix:** [[ 0.8398268 0.8398268 -67.70563 ] [ -1.2607522 1.2717153 99.04504 ]]

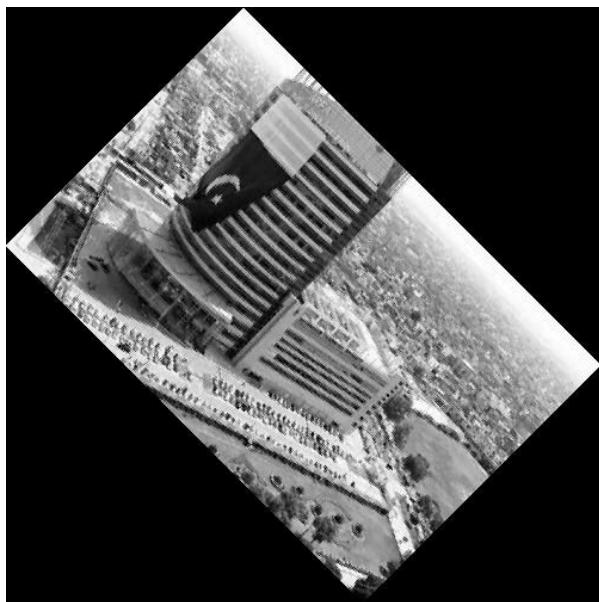
**Mean Square Error:**89.5

**Mean Square Error Pixel:**2592.5

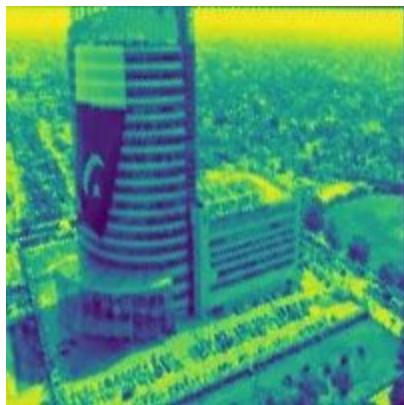
**Arfa1:**



**Arfa2:**



**Result of Arfa2 After Recover Transformation:**



## **Experiment # 02**

**Dataset Image :** mecca1

**Dataset Image :** mecca2

**Result Image:**mecca\_transformed

**Matrix:** [[ -0.94748455 1.2914276 65.709236 ] [ -1.0966461 -0.6739298 278.4248 ]]

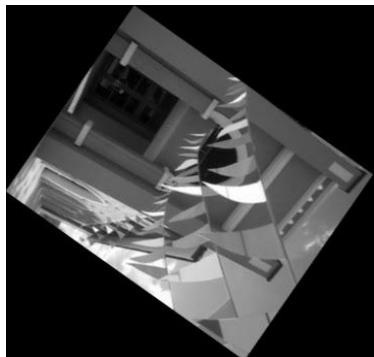
**Mean Square Error:** 50.1

**Mean Square Error Pixel:** 2514.8

**Mecca1:**



**Mecca2:**



## **Result of Mecca2 After Recover Transformation:**



## **Experiment # 03**

**Dataset Image :** station1

**Dataset Image :** station2

**Result Image:** station\_transformed

**Matrix:** Matrix [[ 1.0979252 0.16409934 -27.710154 ][ -0.35248348 1.287331 9.87724 ]]

**Mean Square Error:** 90.6

**Mean Square Error Pixel:** 2518.5

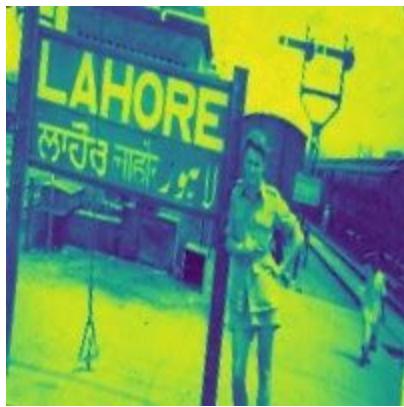
**Station1:**



**Station2:**



**Result of Station2 After Recover Transformation:**



### **Analysis on recover transformation:**

Most interesting part in recover transformation was when i select corner points of image 1 and image 2 then transformation works well and mean square error of both image 1 and transformed image of image 2 decreases.when i select other then corner point it effect means square error.For mean square of correspondence point when i select more points it decrease error and when i select less point it increase error.

## **Task # 02**

### **Image Registration**

#### **Experiment # 01**

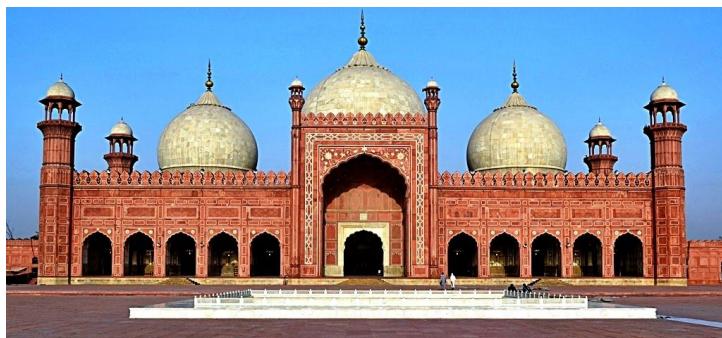
**Dataset Image :** badshahiNew

**Dataset Image :** badshahiOld

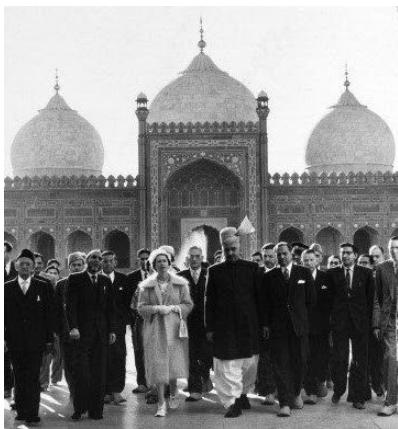
**Result Image:**badshahi\_registered

**Matrix:**[ 1.84581651e+00 -3.76602087e-02 1.78093299e+02 -1.96444595e-03 1.16122851e+00  
-1.11248946e+00 1.41480686e-07 4.86192591e-08 1 ]

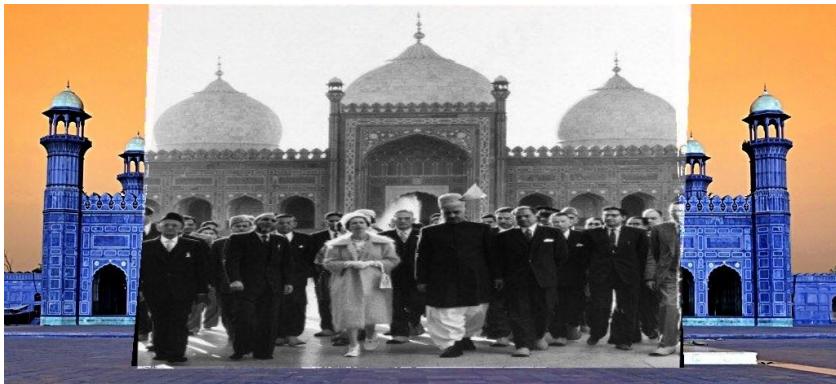
**badshahiNew:**



**badshahiOld:**



**Registered image badshahi:**



## Experiment # 02

**Dataset Image :** faisalMasjidEvening

**Dataset Image :** faisalMasjidNight

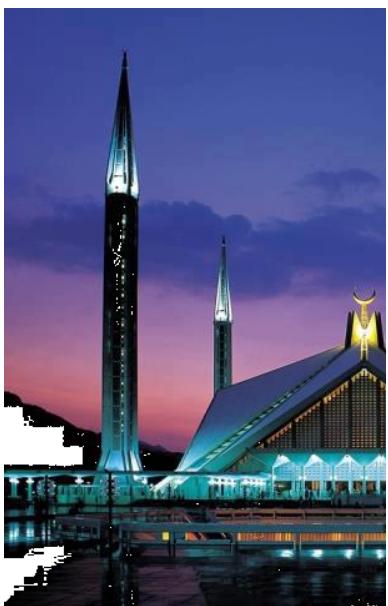
**Result Image:** faisalMasjid\_registered

**Matrix:** [ 1.35800695e+00 2.53343796e-02 -3.40752884e+00 -9.50703971e-03  
1.26639033e+00 2.22961369e+02 1.66060189e-07 -2.28638038e-08 1]

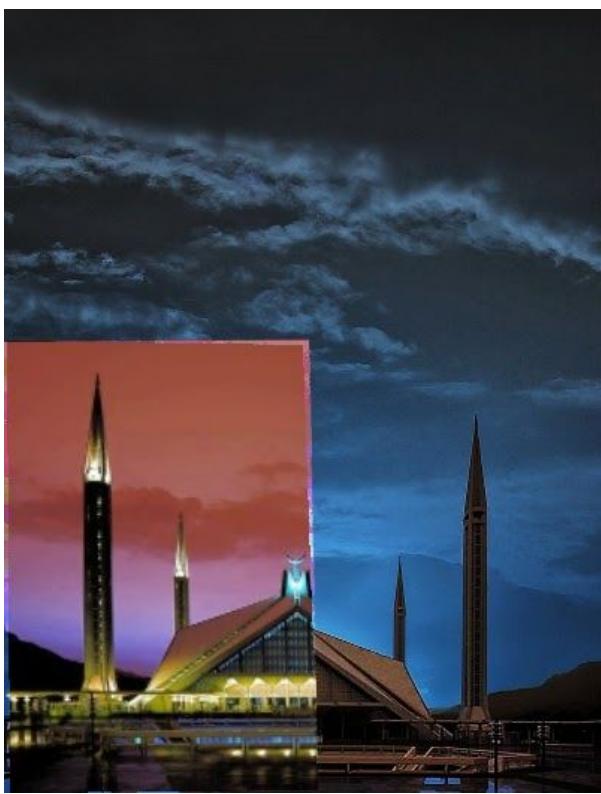
**faisalMasjidEvening:**



**faisalMasjidNight:**



**Registered image faisal masjid:**



## Experiment # 03

**Dataset Image :** qlibnew

**Dataset Image :** qlibold2

**Result Image:** qlib\_registered

**Matrix:** [ 8.18754566e-01 1.59973837e-01 1.16443542e+02 -3.18991852e-02

1.34573474e+00 8.91051722e+01 -5.06131246e-07 6.13425499e-06]

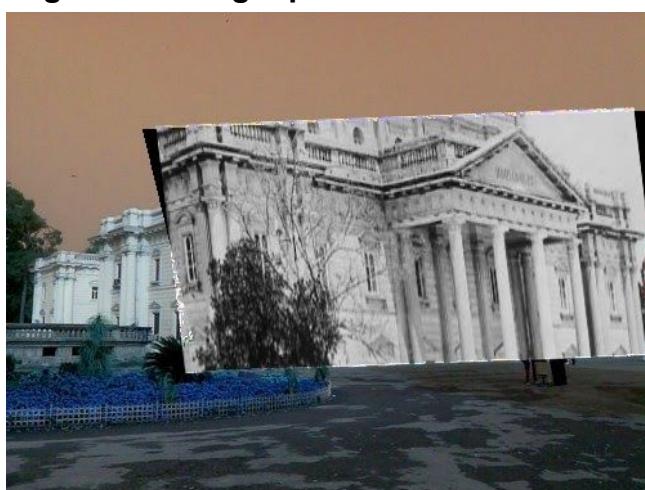
**qlibNew:**



**qlibold2:**



**Registered image qlib:**



## **Experiment # 04**

**Dataset Image : test1**

**Dataset Image : test2**

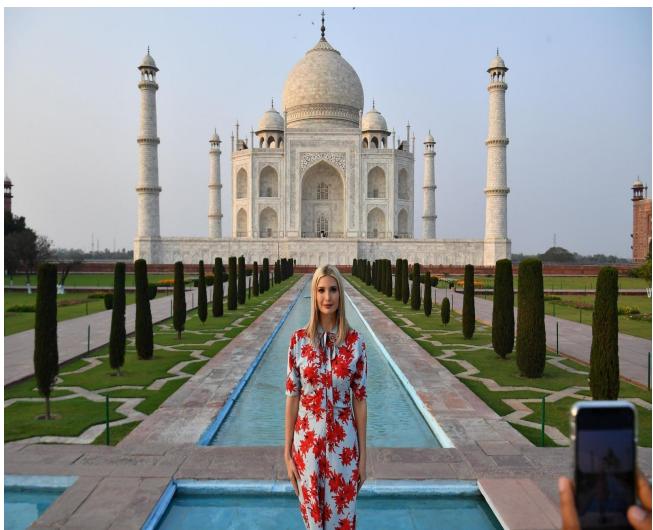
**Result Image: test\_registered**

**Matrix:** [ 1.50904978e+00 3.68759535e-03 3.96805672e+00 -9.43364510e-03  
1.30112246e+00 1.61641399e+02 3.63340916e-09 -1.07344989e-08 1]

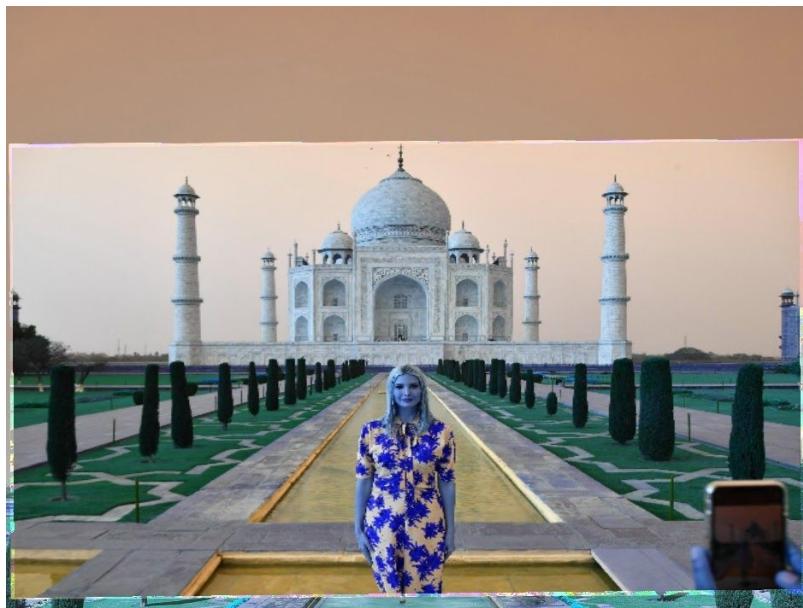
**Test1:**



**Test2:**



### **Registered image Test:**



### **Analysis on Registered image:**

I analyzed that when I select image points of the base image according to the old/given image. It shows the result correctly. When i select randomly points from anywhere that change my matrix so in that case result changes and registration do not work correctly. In the old/second image when I choose corner points it fits correctly according to requirement.

## **Task # 03**

### **Image stitching**

### **Experiment # 01**

**Dataset Image :** image1



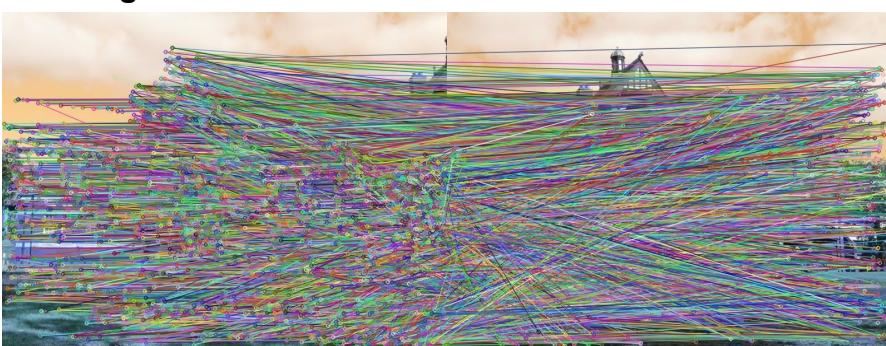
**Dataset Image : image2**



**Feature Points:**



**Matching:**



**Best Match:**



**Image Stitching:**



## Experiment # 02

Dataset Image : image1



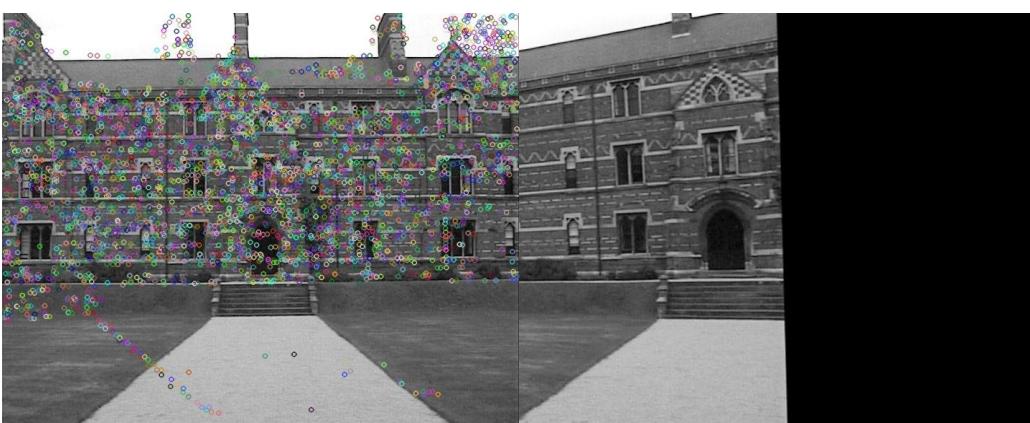
**Dataset Image : image2**



**Dataset Image : image3**



**Feature Points:**



**Matching:**



**Best Match:**



**Image Stitching:**



## **Experiment # 03**

**Dataset Image : image1**



**Dataset Image : image2**



**Dataset Image : image3**



**Dataset Image : image4**



**Dataset Image : image5**



**Feature Points:**



**Matching:**



**Best Match:**



**Image Stitching:**



## Experiment # 04

Dataset Image : image1



**Dataset Image : image2**



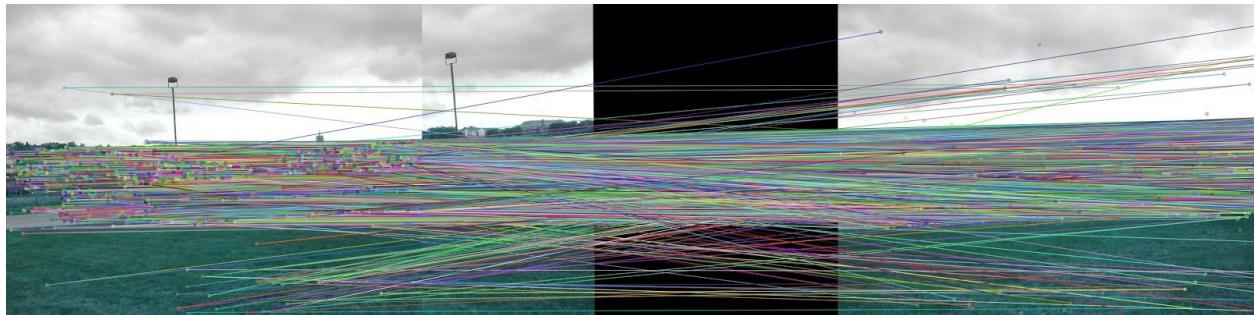
**Dataset Image : image3**



**Feature Points:**



**Matching:**



**Best Match:**



**Image Stitching:**

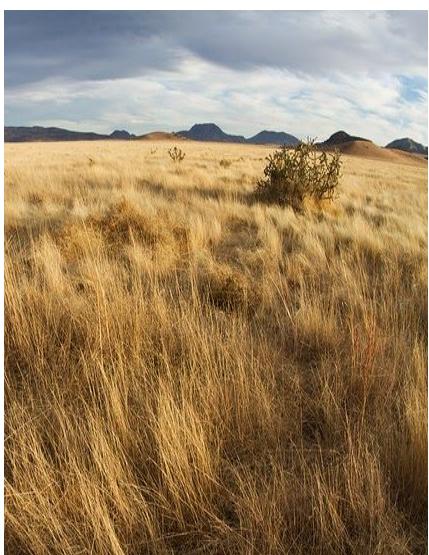


## **Experiment # 05**

**Dataset Image : image1**



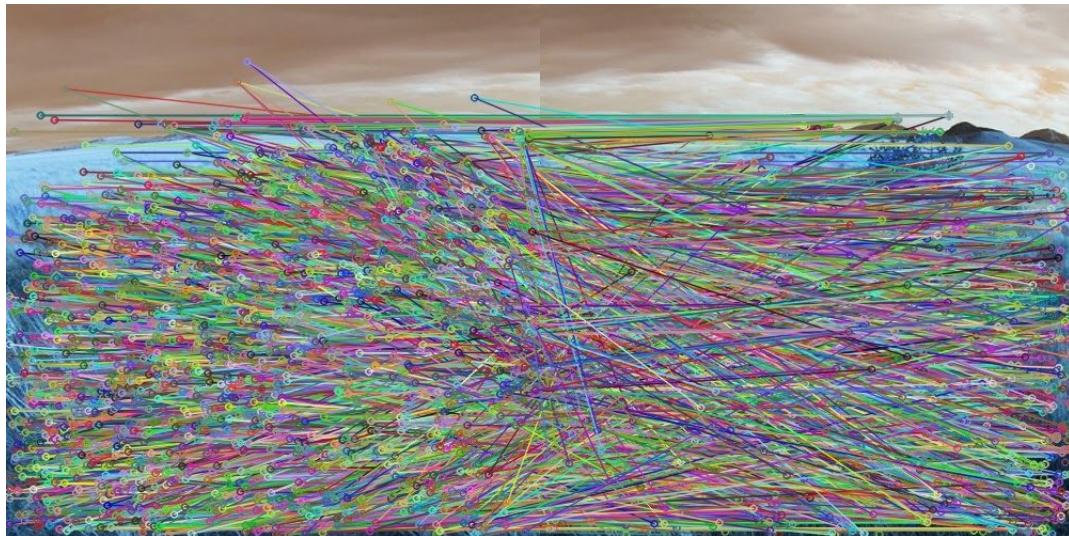
**Dataset Image : image2**



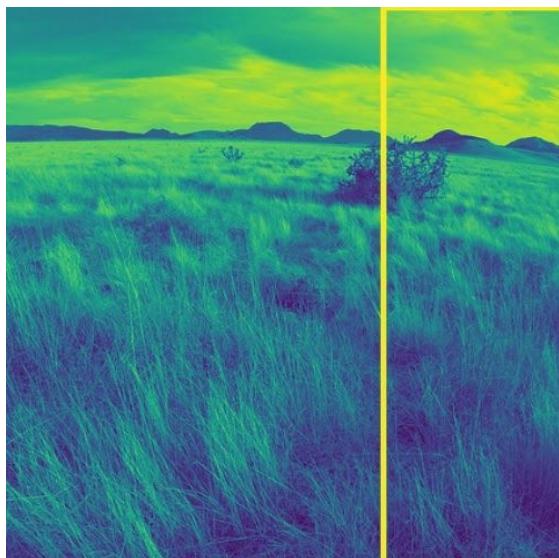
**Feature Points:**



**Matching:**



**Best Match:**



**Image Stitching:**



## **Experiment # 06**

**Dataset Image : image1**



**Dataset Image : image2**



**Dataset Image : image3**



**Dataset Image : image4**



### Feature Points:



### Matching:



### Best Match:



### Image Stitching:



### Analysis on Image Stitching:

I analyzed that when I was collecting new data sets for stitching and I chose different images of the same scene with different color effects day and night. In that case Image stitching does not work correctly. It works correctly when I take one panorama image or the same image with different angles and after that when I apply my algorithm it works fine and correctly.

