Mini Project - II

"3 - Image Stitching Using Matlab"

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Introduction

- **Image stitching** combines a number of images taken at high resolution into a composite image. The composite image must consist of images placed at the right position and the aim is to make the edges between images invisible

Image stitching is needed in many applications like

1.Image stabilization feature in camcorders that use frame-rate image alignment
2.High-resolution photos in digital maps and satellite imagery
3.Medical imaging
4.Multiple-image super-resolution imaging
5.Video stitching
6.Object insertion

- ***The effectiveness of image stitching depends on the overlap removal, matching of the intensity of images, the techniques used for blending the image***

Correlation:

- It compares the common variables between two in
- It used here to detect key points in images based c pixel values

Fig 3: Stitching of an image based on Pixel values

Blending:

It computes correlation coefficient between a and b where a and b are the matrix of same matrix. "***imshow(I)***" displays the grayscale image I.

"***imshow(I,[low high])***" displays the grayscale image I, specifying the display range for I in [low high]. The value low displays as black. The value high displays as white. Values in between are displayed as intermediate shades of gray, using the default number of gray levels. If you use an empty matrix ([]) for [low high], imshow uses [min(I(:)) max(I(:))]; that is, the minimum value in I is displayed as black, and the maximum value is displayed as white.

Existing System

- **IMAGE STITCHING USING HARRIS FEATURE DETECTION**

Themainstepsinclude image acquisition,
image registration image blending. The image registration process used in this method is a feature based method which uses HARRIS corner detection algorithm for feature detection. The image stitching algorithm is then processed to give a stitched panoramic image.

Correlation-based stitching:

- We don't need to extract functionality in a correlation-based assembly approach. This process depends on the relationship between two images. This is a variant of the rotation, scale and other transformations of the International Journal of Computer and Information Security. For accurate pre-processed images, the correlation ach is effective to apply. Determining the correlation values is the first step in this method. Matching points of interest on two uncalibrated images is a fundamental problem in computer vision. Correlations are generally used in many applications that require corresponding parts of the images. We calculate the correlation coefficient r between 3 image A,B,C using the correlation equation,

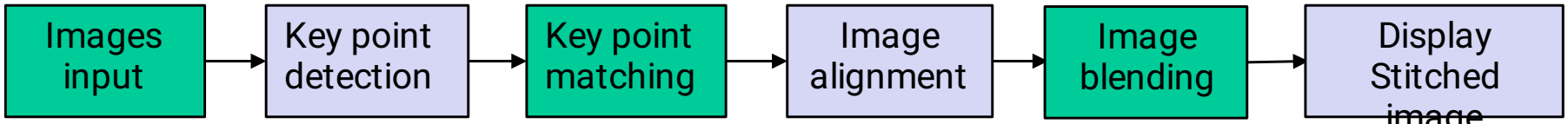
- After determining the maximum correlation value of the 3 images, we need to find the maximum degree of the column vector. Merging is the next step. When the source pixels are assigned to the final surface, they are mixed to generate a panorama, and the stitch line is adjusted to reduce the visibility of the seams between two images.

Problem Statement & Objectives

Problem Statement: The problem with the existing system which
Gives the output image very curvy and image won't be clear

Objective: The papers goal is to create Matlab scripts that will stitch two images together to create one larger image. Given sequence of images taken from a single point in space, but with varying orientations, it is possible to map the images into common reference frame and create a perfectly aligned larger photograph with a wider field of view. This is normally referred to as image stitching.

Block Diagram

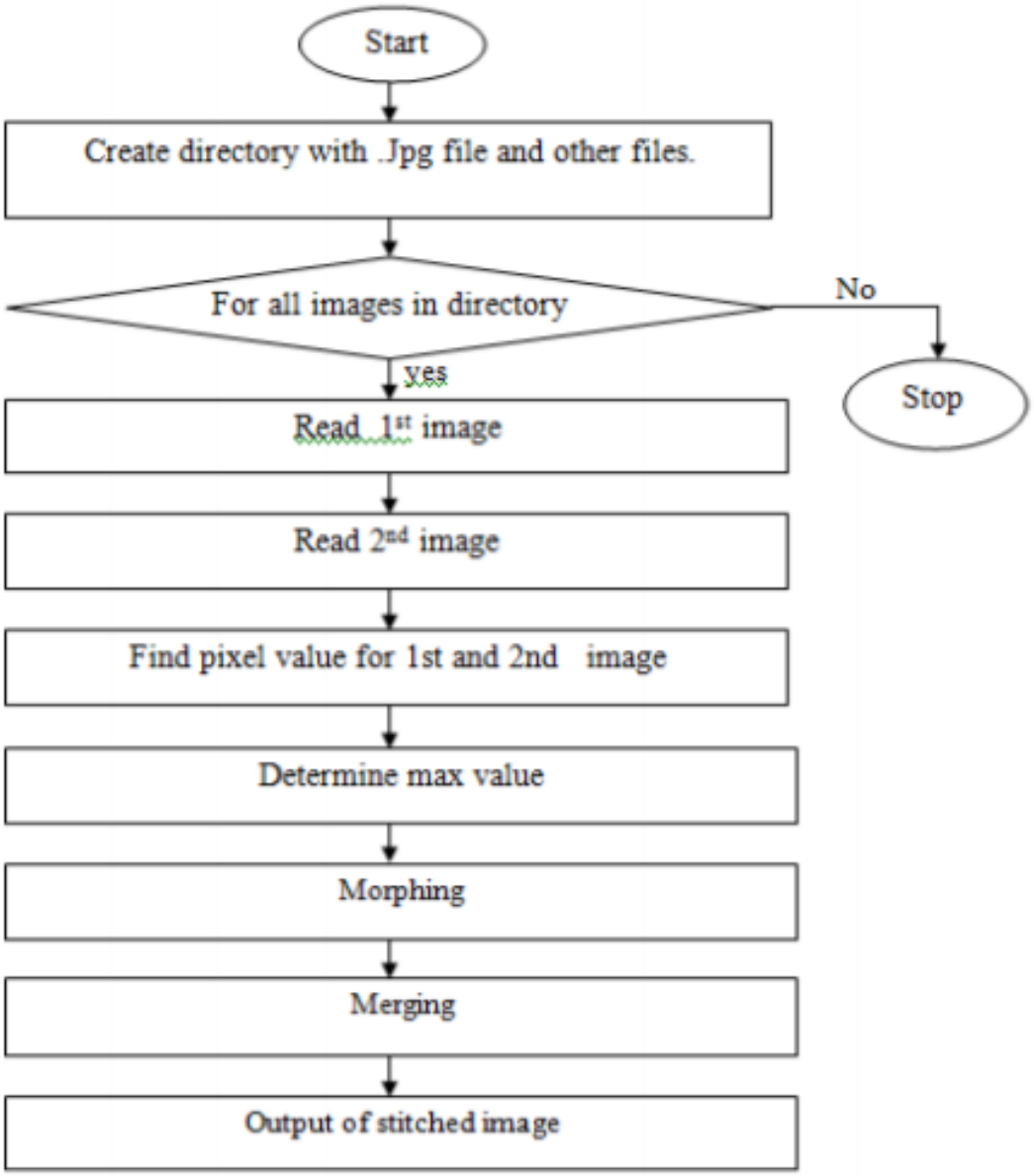


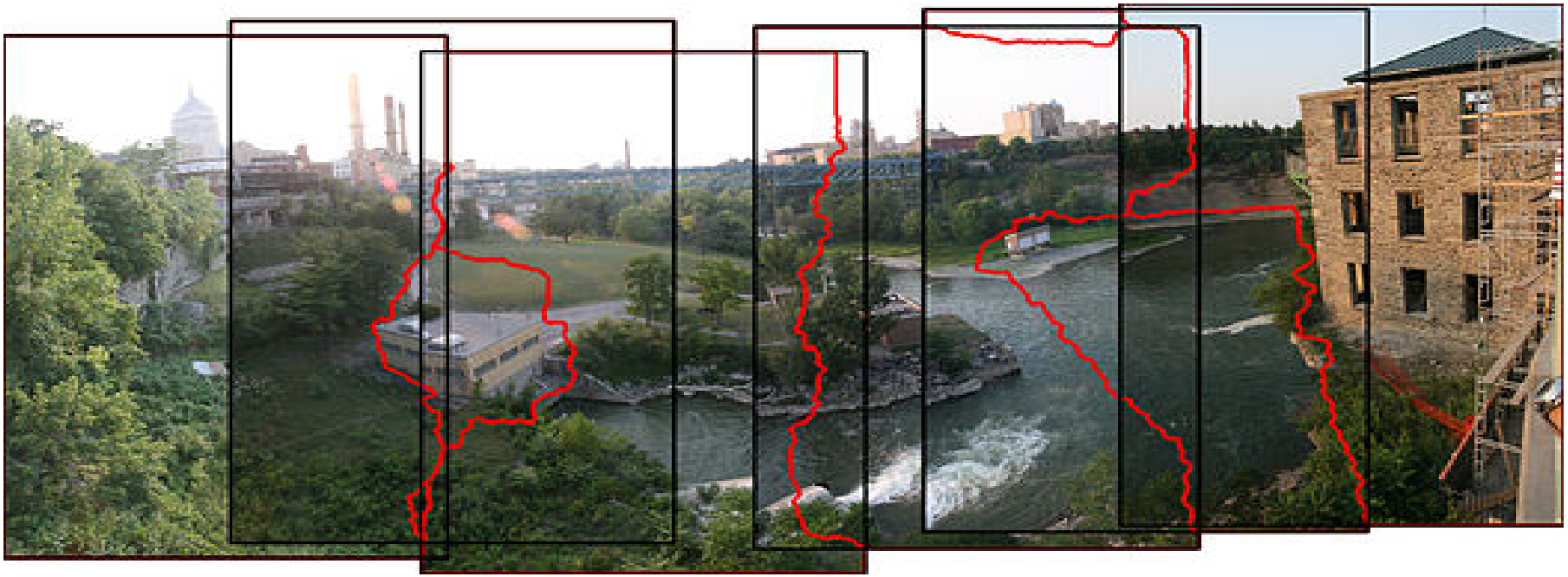
Software Specification

Software used :Matlab-2016

MATLAB (*matrix laboratory*) is a multi paradigm numerical computing environment and proprietary programming language developed by MathWorks. MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms creation of user interfaces, and interfacing with programs written in other languages.

Algorithm / Flow Chart





- Here the area within the red outline shows the common region in sequence of pairs that repeats in one of pair of images.
- Now the images are stitched in a way that the region is repeat only once.

Advantages

- Image stitching is most widely used topics in computer vision and graphics.
- It is closely associated with the daily lives of people, such as constructing beautiful panoramas with smartphones applications, creating wide field-of-view (FOV) videos for surveillance, and assisting automobiles.
- Image stitching algorithms construct a wide-FOV view from a sequence of images
- Compared to video stitching, image stitching attracts high attention

Example

Future Scope

Image stitching is widely used in modern applications, such as the following:

- Document mosaicing
- Image stabilization feature in camcorders that use frame-rate image alignment
- High-resolution photomosaics in digital maps and satellite imagery
- Medical imaging
- Multiple-image super-resolution imaging
- Video stitching
- Object insertion

References

- [1] Matthew Brown and David G. Lowe. 2007. Automatic Panoramic Image Stitching using Invariant Features. Int. J. Comput. Vision 74, 1 (August 2007), 59-73.

- *Mann, Steve; Picard, R. W. (November 13–16, 1994). "Virtual bellows: constructing high-quality stills from video" (PDF). Proceedings of the IEEE First International Conference on Image Processing. IEEE International Conference. Austin, Texas: IEEE*

Progress Work

Group-SREERAJ,HASAN,VASU,MAHESH	WORK ACHEIVED
ALL	MINI PROJECT TITLE
ALL	DESIGNING OF CODE
ALL	MAKING PPT TO PRESENT
ALL	FINAL REPORT
ALL	EXECUTION OF CODE

Milestones/Schedule

Milestone	Baseline Date	Target Date	Achievement
Title of the project	28/01/2020	03/02/2020	Success
Approvel of the project	-	06/02/2020	Success
FIRST REVIEW	11/04/2020	11/04/2020	Success
SECOND REVIEW	02/05/2020	02/05/2020	Success
PLAGARISM CHECK	02/05/2020	02/05/2020	Success

Thank You