Project Name and ID:

Seam Carving for Content Aware Image ReSizing (**ID:4**)

Team Members :

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Github Link: https://github.com/SandeepKallepalli/SeamCarving

Overview

What is the problem?

The main theme of Seam Carving is to resize image without distorting the features in the image . It is very useful to project media on different devices(like cellphones ,Laptops , Tablets) of different size ratio . For example let us resize the below image using traditional methods (before Seam carving)

Original Image to resized

Image resized where castle is distorted

How things are done ?

In Seam Carving we are using dp to find the least energy pixels(cummulative sum of energy from pixel to pixel) from the energy image and after that we are doing it recursively to find the optimal path for vertical or horizontal seam.Optimal path is the least energy valued pixels which may not be a straight line.This is the recursive function that we are going to use.And vertical seam(defines the height of the image) is having one pixel in one row and shortens the width and horizontal seam(defines the width of the image) has one pixel in one column and shortens the height of the image.

T(i,j) = e(i,j)+MIN(T(i, j-1), <-- moving straight down

T(i+1, j-1), <-- moving down and to the left

T(i-1, j-1) <-- moving down and to the right

Goals

1. Our goal is to resize the image to fit on any screen(device) without distortions in the image like

2. Object Removal in images using user interface. The user marks the target object to be removed and then seams are removed until all the target pixels are gone. In this process we can also make a specific region to protect also.
3. Content Amplification of the image with preserving the size of the image using seam carving.

Results

I) Results showing Seam Carving is good for resizing

There are different ways to resize a image like crop,removing minimal columns,seam etc. Our first result is to show that seam carving is the best way of resizing without distortion or removal information in the image.

II) Different energy functions for Seam Carving

The main theme in seam carving is to remove the least energy seam, here the energy of pixel is given by a energy function . Therefore let us see how seam carving resizes images with different energy functions.

III) Object removal & Content Amplification

Results on running seam carving for object removal and Content Amplification (which are one of our main goals)

Team Members and Division of work

We are thinking of Understanding the concept of Seam Carving and the reference paper combinely and the remaining work is divided as follows

Sandeep Kallepalli will keep efforts on to achieve the first and second goals and their results i.e why seam carving is better than many other resizing tools/Algos & Object removal

Siva Abhilash Varma will keep efforts on to achieve the remaining goals and their results accordingly. i.e how object removal will be used to remove the black mask for the part that we didn't wanted.Without distorting other parts of the image.

Milestones

I. Understanding and Implementing Seam Carving for change in Image aspect ratio

Understand the concept of seam carving and the given reference paper thoroughly and start the implementation of the paper for our first goal which is to show results that seam carving is good for resizing.

Complete By: Before the first Presentation of the project (First Evaluation)

II. Apply the concept of Seam Carving for Object Removal and Content Amplification

Our remaining goals which are Content Amplification and Object Removal will be done and results will be shown.

Complete By: Before the Final Presentation of the project (Final Evaluation)