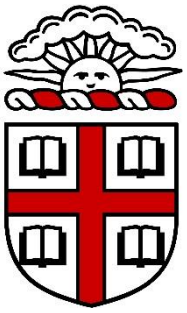

School of Engineering
Brown University
Box D
184 Hope Street
Providence, RI 02912

Object Detection Based on GPU Programming

Team Project Update 3

Jiacheng Guo, jiacheng_guo@brown.edu
Tianlun Liu, tianlun_liu@brown.edu
Tianxiong Wang, tianxiong_wang@brown.edu

Date submitted: December 11, 2016

Summary of Accomplishments

1. Red Eye Removal

For the red eye removal part, we created a score for every pixel that tells us how likely it is to be a red eye pixel at first. Then, we sorted these scores in ascending order so that we know which pixels to alter to remove the red eye. When sorting scores, we implemented parallel radix sort with CUDA. we constructed a histogram on each pass of how many of each "digit" there are. Then we scanned this histogram so that we know where to put the output of each digit. At last, we combined the results to determine the final output location for each element and move it there.

2. Implement FAST algorithm:

When extracting features from images and realizing corner detection, we adopted the Features from accelerated segment test (FAST), which is a corner detection method. By using this, we can extract feature points from image. At beginning, we decided to adopt it because of the advantage of the high-speed performance in real-time video detection. However, we are just trying to implement it in image processing.

Challenges

1. Current challenges:

1) Complete red-eye removal function.
2) Complete the feature extraction and detection section to implement FAST algorithm and realize corner detection.

2. Ongoing challenges:

1) Finish final team project code repository assignment on time.

Scope change

This is our last week to complete coding work of this project. Due to challenges in image processing section, we are reluctant to change our goal when realizing detection.

To begin with, the good news is tasks in image processing have been completed.

However, the seamless image composition task is still suspended because we still cannot build transition zones to coordinate the influence from source and target images with the matte from matting techniques.

Then, we are trying our best to finish red-eye removal, feature extraction and detection section. After discussion, we are trying to complete FAST algorithm implementation to realize corner detection before the due.

Project Schedule

Due to some task delays and changes, we have updated the latest version of gantt chart shown as below.