**CMPT365 Project Report**

**1. Using IBM model to calculate Histogram Differences**

We implement both methods introduced in the project description: histogram intersection method and IBM histogram

difference **.** Methods can be switched by choosing ‘IBM model’ or ‘Minimum method’ in pop-over menu in GUI we provide before clicking ‘Generate Result’ button to run the code.

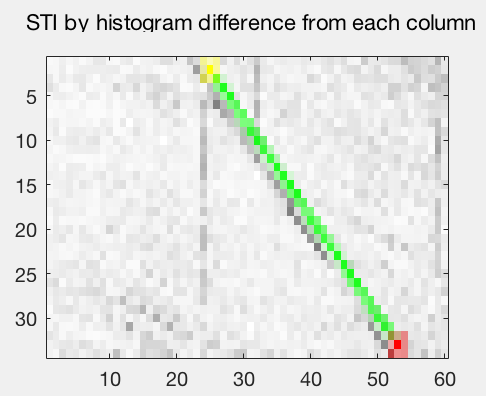
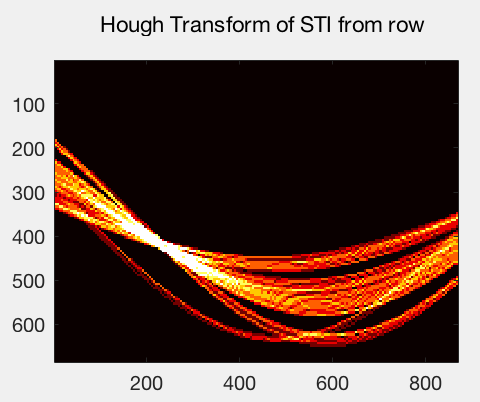
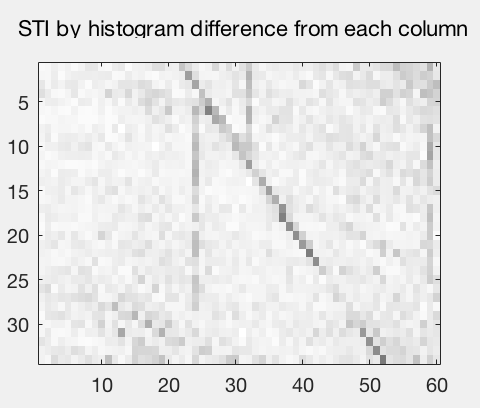
**2. Using Hough transform to find edge automatically**

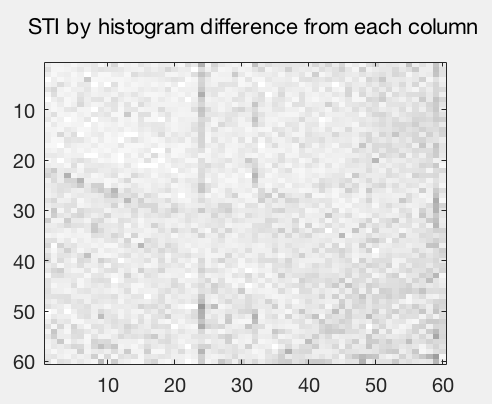
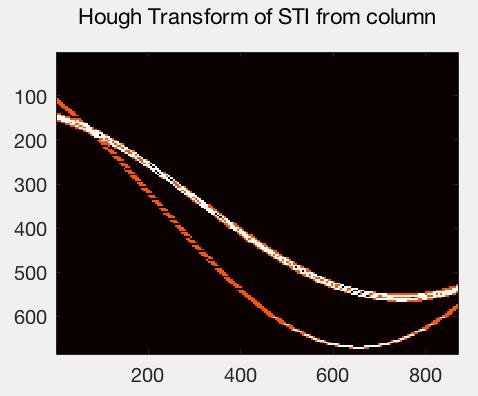
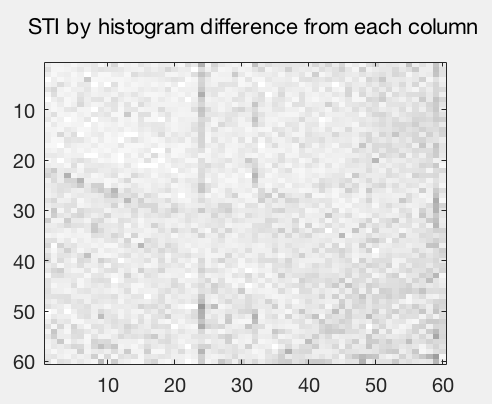
After applying IBM model or histogram intersection, we can get an STI by Histogram Differences, in which an edge can be clearly found. Then we use Hough transform to find that edge automatically.

The Hough transform is a technique to find edges in an image. In brief, the straight line y = k0\*x + k1 is represented as a point (k0, k1) in the image generated by Hough transform. If there are more curves go through a point, the straight line that point represents is more likely to be in the original image.

In general, the Hough transform can find multiple edges in the image. However, in this project we expect to get only one edge which is most clear to find. And we also set the minimum length of edge so as to get a better result.

The first image below is the STI by Histogram Differences, in which we need to find the position of the edge. The second one is the image generated by the Hough Transform, in which we can find a clear intersection point (k0’, k1’). Then we draw the straight line y = k0’\*x + k1’ on the image and that perfectly finds the edge. If there is no clear edge in the image, the Hough transform will not be able to find an edge.





**3. Experiment on video dissolves**

We have tried the code on the video dissolves to find what will happen.

Firstly, we use the video with a cross dissolve as the video transition. The result is in the first image below. It turns out that no edges are found in both images. So the video transition might not be a wipe.

Secondly, we use the video with a dip dissolve as video transition. The result is in the second image below. It turns out that both images contain a thick edge, which is abnormal if the video transition is a wipe. Thus the video transition might not be a wipe.

