CSE 5524 HW5

**Problem 1**

T = 1, all the pair-wise differences are black.

T = 0.5, all the pair-wise differences are black.

T = 0.25, we could start to see the motion

A picture containing fireworks, star

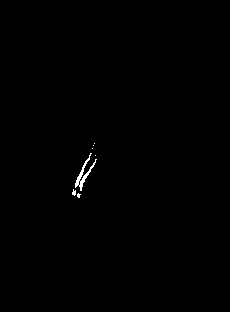
Description automatically generated A picture containing fireworks, star

Description automatically generated A picture containing fireworks

Description automatically generated

T = 0.125, we could see more white area

A picture containing fireworks

Description automatically generated  A picture containing flying, fireworks, airplane

Description automatically generated

T = graythresh

A picture containing fireworks, sitting, star

Description automatically generated A picture containing computer, fireworks, computer, star

Description automatically generated A picture containing flying

Description automatically generated

Discussion: After median filter the image, the above images are among 21 difference images for each threshold value. As we decrease the threshold value, we could see more motion area. The final threshold value I chose is computed from graythresh.

**Problem 2**

Logo

Description automatically generated A picture containing background pattern

Description automatically generated

MEI MHI

Nvals for MEI after normalization

0.4118 0.0862 0.1297 0.0717 0.1291 0.0270 0.0114

Nvals for MHI after normalization

0.4684 0.2973 0.0863 0.1287 0.1600 0.0292 0.0205

Observations: The result seems to be plausible since as the earlier movements’ color is lighter than the latter movements’ color.

**Problem 3**

Here is the two created images:

Shape

Description automatically generated A picture containing shape

Description automatically generated

Here is the vector field of the motion on the first image

A picture containing shape

Description automatically generated

Observations: The result is what I expected since we are moving the box 1 pixel right and 1 pixel down. Then vector field shows the exact right direction. The flows on the up and bottom side are pointing downward and flows on the left and right side are pointing right. The flow on the upper left and bottom right corners are pointing 45 degree to the bottom right. The flow on the upper right and bottom left are pointing right and down respectively.