CS 6476: Computer Vision
Fall 2019 PS5
HUILI HUANG

Q1:

Threshold = 39500
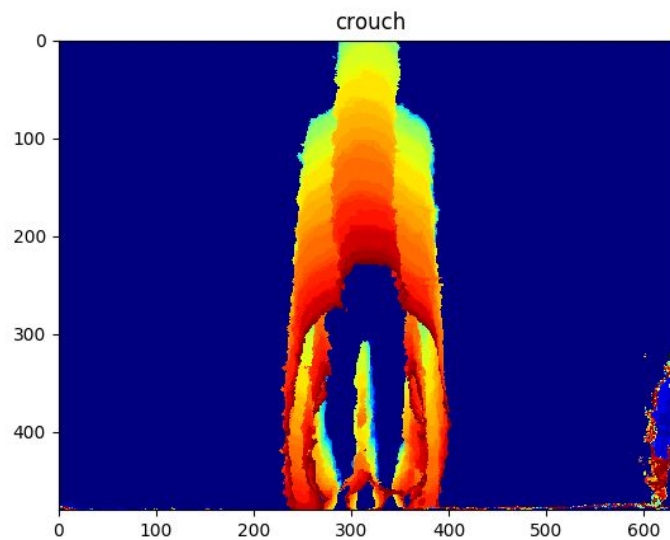MHI image for crouch-p1-1

Figure 1 Crouch

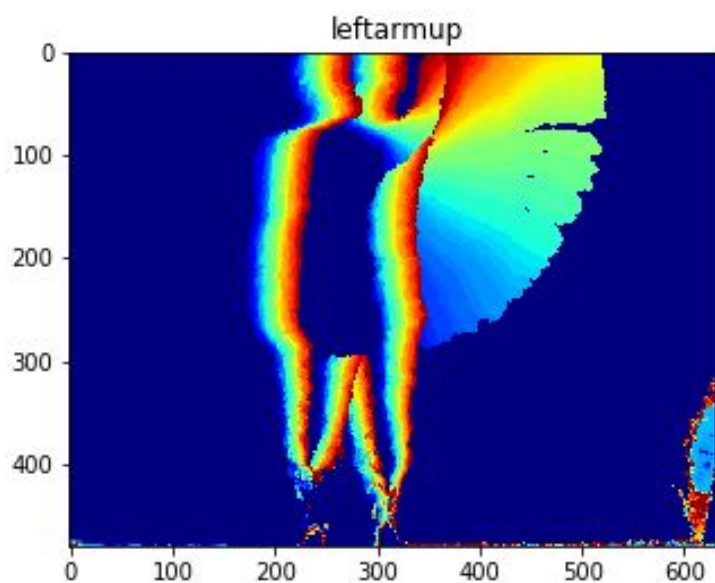MHI image for left-arm-p1-1
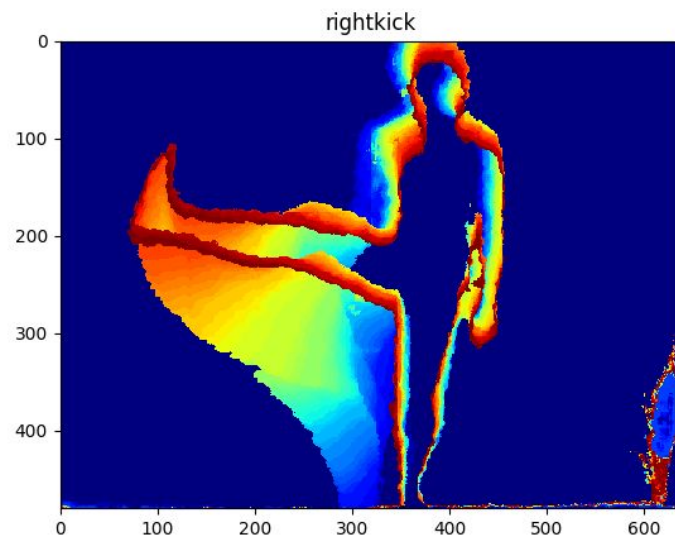

Figure 2 Left arm up

MHI image for rightkick-p1-1

Figure 3 Right Kick

Q4 :

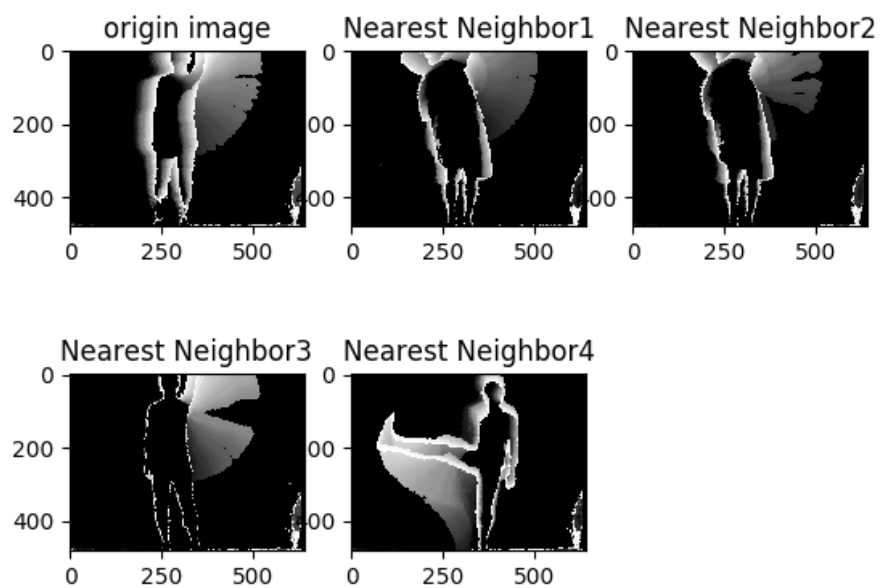My nearest MHI images are as follows:

Figure 4 Nearest 4 images for Left-arm-up-p1-1

As you can see in figure 4, the first image is the original one. The rest of images are kth nearest image. The same as Figure 5.
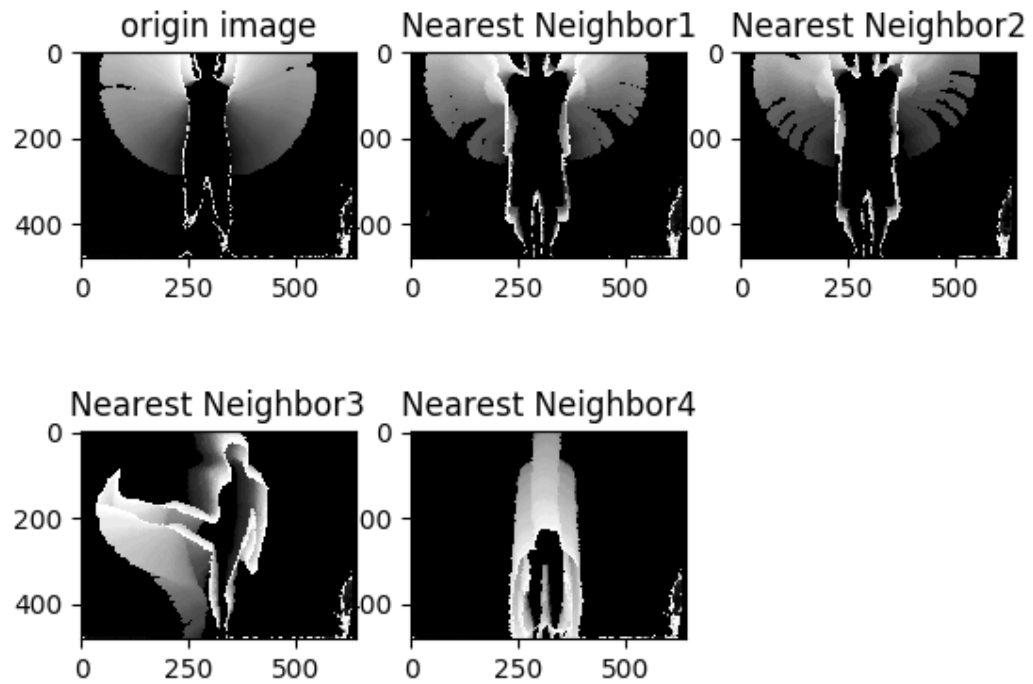
Nearest MHI for botharms-up-p1-1

origin image   Nearest Neighbor1   Nearest Neighbor2

Nearest Neighbor3   Nearest Neighbor4

Figure 5 Nearest 4 images for Both-arm-up-p1-1

Q5:

The confusion matrix is :

$$[[4.\ 0.\ 0.\ 0.\ 0.]$$
$$[0.\ 2.\ 1.\ 1.\ 0.]$$
$$[0.\ 0.\ 4.\ 0.\ 0.]$$
$$[0.\ 0.\ 1.\ 3.\ 0.]$$
$$[0.\ 0.\ 2.\ 0.\ 2.]]$$

Table 1 Confusion Matrix

	Both arms	Crouch	Left arm up	Punch	Right Kick
Both arms	4	0	0	0	0
Crouch	0	2	1	1	0
Left arm up	0	0	4	0	0
Punch	0	0	1	3	0
Right Kick	0	0	2	0	2

The mean recognition rate per class is :

[1. 0.5 1. 0.75 0.5]

Table 2 Mean Recognition Rate

	Mean Recognition Rate
Both arms	1
Crouch	0.5
Left arm up	1
Punch	0.75
Right Kick	0.5

The overall recognition rate is : 0.75

Analysis:

From the tables and data above, the overall recognition rate is 0.75 and the mean recognition rate is above 0.5. Left arm up is the most confused class among others which drop the mean recognition rate of Crouch, Punch and Right Kick. This is because we use Euclidean distance to calculate the distance and regard the nearest as the label. The "arch" in left arm up will present in each of the failure MHIs, it will be reasonable to find some wrong labels. If we want to improve the algorithm, some cluster algorithms may work.