Curtis Tremblay- CISC 472 Assignment 3

Task 1

No required documentation

Task 2

Function calls are in matlab script 'assign3.m' as well as copied below:

```
%%
%Task Two CT
display_landmarks(volume_CT,[-83.3998;-209.4639;-803.00],[-26.14317;-
93.6106;-643.297],5000);
display_landmarks(volume_CT,[-83.3998;-209.4639;-803.00],[9.08479;-133.96;-
638.603],5000);
display_landmarks(volume_CT,[-83.3998;-209.4639;-803.00],[60.6069;-112.42;-
650.373],5000);
display_landmarks(volume_CT,[-83.3998;-209.4639;-803.00],[42.0235;-75.6846;-
656.996],5000);
display_landmarks(volume_CT,[-83.3998;-209.4639;-803.00],[-6.67128;-71.681;-
649.853],5000);

%%
%Task Two MRI
display_landmarks(volume_MRI,[-89.7749329;-48.4298096;-167.5021362],[-
34.5029;56.4774;-59.9131],2000);
display_landmarks(volume_MRI,[-89.7749329;-48.4298096;-
167.5021362],[52.4359;38.6747;-67.2723],2000);
display_landmarks(volume_MRI,[-89.7749329;-48.4298096;-
167.5021362],[1.56049;17.2319;-52.8177],2000);
display_landmarks(volume_MRI,[-89.7749329;-48.4298096;-
167.5021362],[33.0425;74.4548;-76.3488],2000);
display_landmarks(volume_MRI,[-89.7749329;-48.4298096;-167.5021362],[-
15.5747;78.1617;-68.5479],2000);
```

Task 3

i) `[q1,r1,t1,rms]=horns([1,1,0;0,0,0],[1,0,0;0,1,0])`

Expected result: [1,1,0;0,0,0]* [1,0,0;0,-1,0;0,0,-1]+[0,1,0]=[1,0,0;0,1,0]

Actual result:

q1 =

0

1

0

0

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r1 =

```
    1     0     0
    0    -1     0
    0     0    -1
```

t1 =

```
    0
    1
    0
```

rms =

```
    0
```

ii)

q =

```
    0.9992
   -0.0390
    0.0098
    0.0090
```

rotation =

```
    0.9996   -0.0188    0.0190
    0.0173    0.9968    0.0780
   -0.0204   -0.0777    0.9968
```

translation =

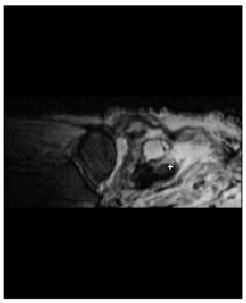
```
    2.0689
  200.4366
  573.5028
```

rms =

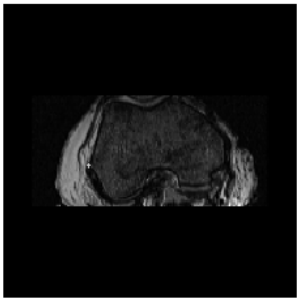
```
   3.8520e-05
```

Frontal Plane

Saggital Plane



Axial Plane



iii)

q2 =

```
   0.9992
   0.0390
  -0.0098
  -0.0090
```

rotation2 =

```
   0.9996    0.0173   -0.0204
  -0.0188    0.9968   -0.0777
   0.0190    0.0780    0.9968
```

translation2 =

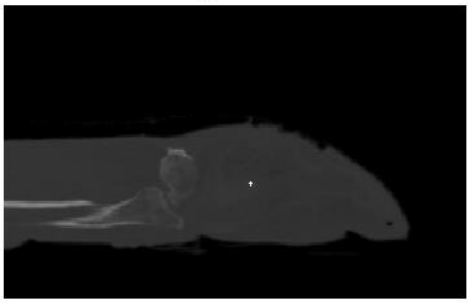
```
   6.1513
 -155.2100
 -587.3300
```

rms2 =

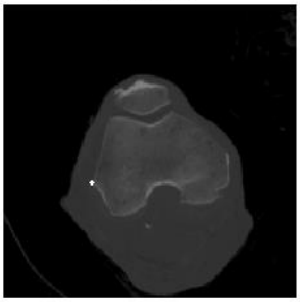
3.8520e-05

Frontal Plane

Saggital Plane

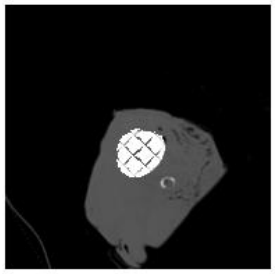


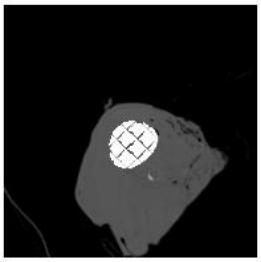
Axial Plane

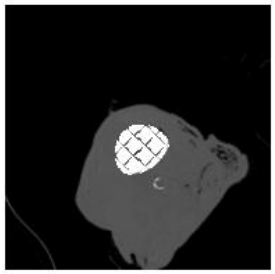


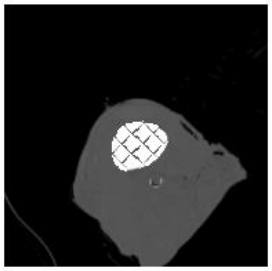
Task 4

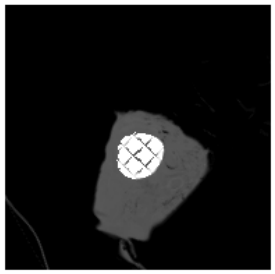
ii) See next page



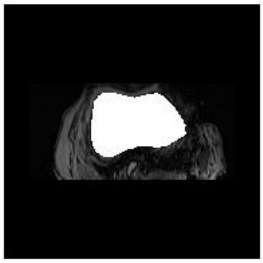


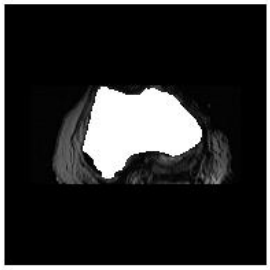


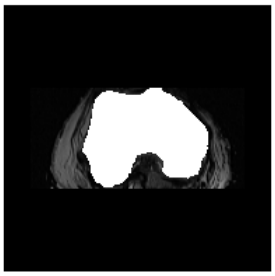


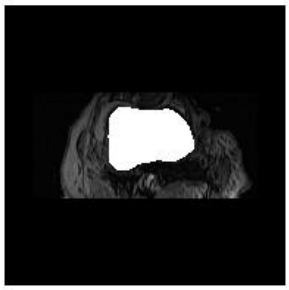


iii) See next page



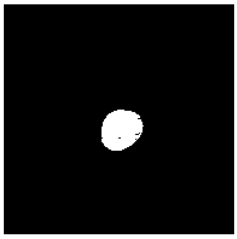


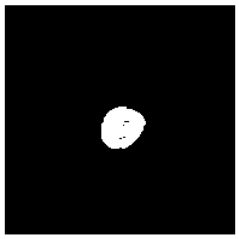


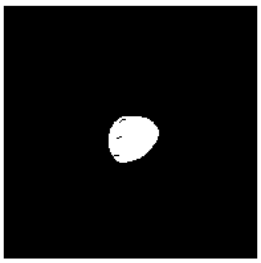


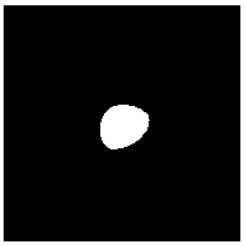
Task 5

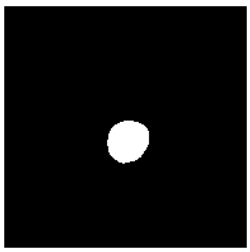
i)





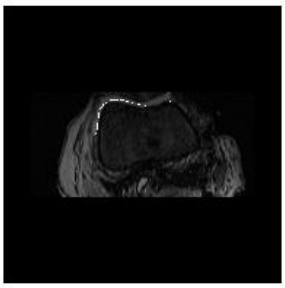


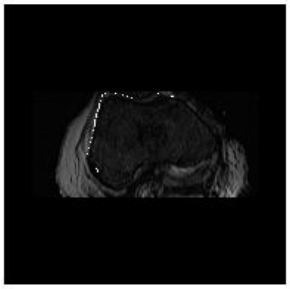


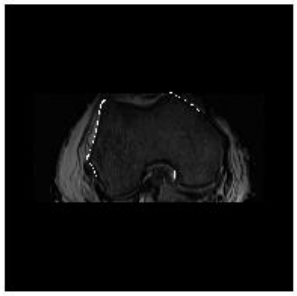


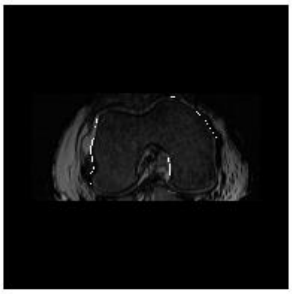
iii) 65239mm^3

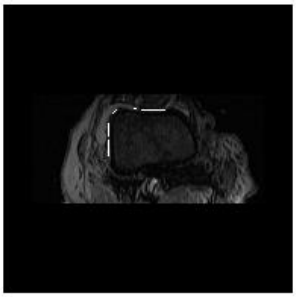
v)





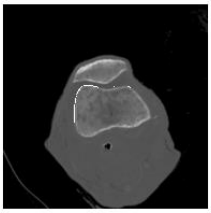
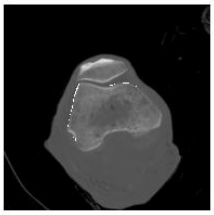
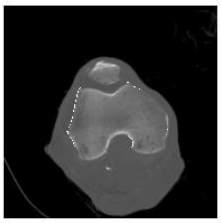
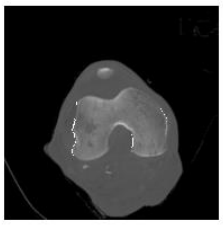
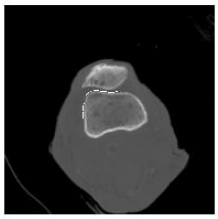




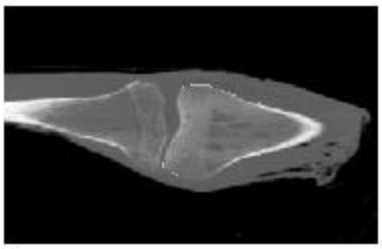


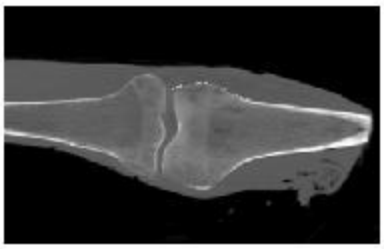
Task 6

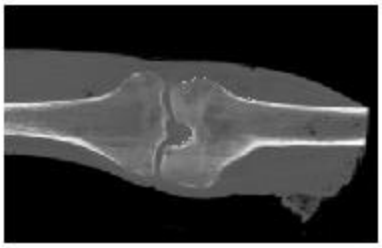
i) See next page

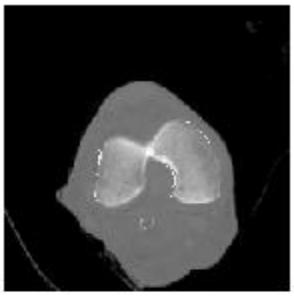






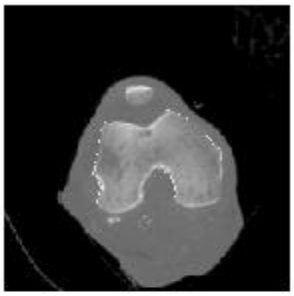
iii)

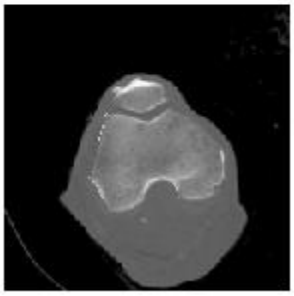












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