CS475 Report

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About the Project:

In this project we are modelling a transformer in OpenGl and showing how it goes from the vehicle state to the humanoid state.

We have modelled our transformer based on Megatron who converts from a tank to a humanoid.

We are using a hierarchical model tree and display lists for the same.

Stages of Transformation:

Step 1: In the tank form.

Step 2: Rotate the legs. The legs are now at the side of the bottom of the tank
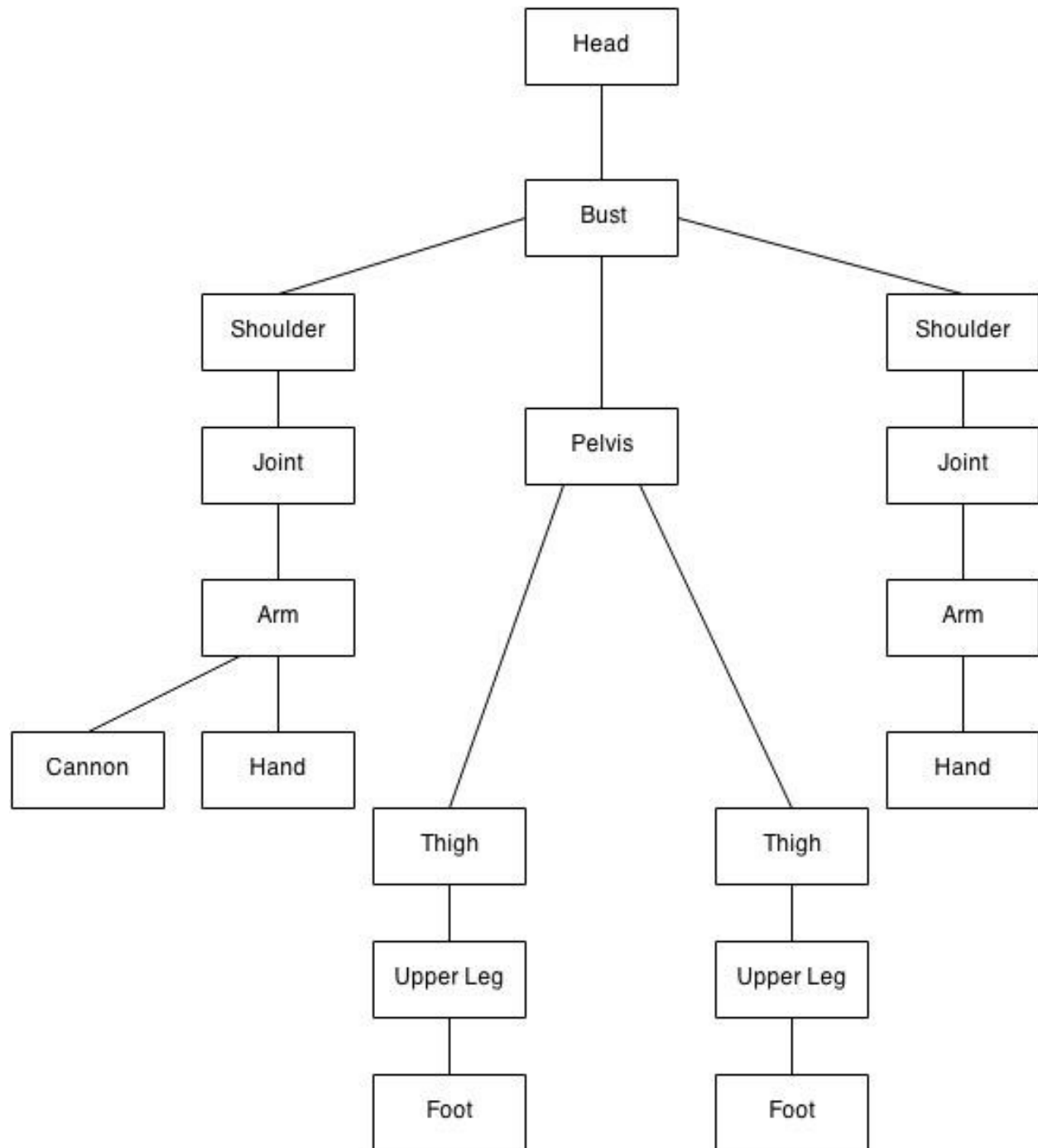
Step 3: Rotate legs again to get them in proper position. Thighs are now visible Make the tank rotate.

Step 4: Rotate the bust so that now head is on top and torso is in position.

Step 5: Rotate arms so that they are now on either side of our torso.

Step 6: Flip so that arm faces forward, and translate so that the lower arm goes downward and biceps are now visible. We now have it in Megatron form.

Hierarchy Model Tree

```
                              Head
                                |
                              Bust
             /                  |                  \
        Shoulder              Pelvis             Shoulder
            |              /          \              |
         Joint         Thigh          Thigh        Joint
            |             |              |            |
          Arm        Upper Leg      Upper Leg       Arm
         /   \            |              |            |
   Cannon    Hand       Foot           Foot         Hand
```

Parts that Move:

Thigh: 3 dof

Shoulder: 3 dof

Torso: 3 dof

Hand: 2 dof

Elbow: 1 dof

Knee: 1 dof