CS 475 Assignment 3

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November 2020

Contents

1 Introduction

Each section from 2 to 4, describe the controls provided for their corresponding models and the hierarchical models themselves. Section 5 should be referred if the user cannot get a hang of our camera controls. It also states other control features added to our programs.

2 Rider

2.1 Controls

The controls for various joint movements in rider is specified in Table 1. Every joint other than the torso, knees and elbows, have 3 degrees of freedom.

Keyboard control	Function
/	Controls the Rider's Root
1	Controls the Torso
2	Controls the Neck
3	Controls the Shoulder(L)
4	Controls the Shoulder(R)
5	Controls the Elbow(L)
6	Controls the Elbow(R)
7	Controls the Leg(L)
8	Controls the Leg(R)
9	Controls the Knee(L)
0	Controls the Knee(R)
-	Controls the Ankle(L)
=	Controls the Ankle(R)

Table 1: Rider Controls

The above mentioned commands works as a switch to shift control between objects, then keys mentioned below are used to rotate the objects.

↑	Rotate around X
↓	Rotate around X
←	Rotate around Y
→	Rotate around Y

Table 2: Object Controls

Also check the commands mentioned in 4.

2.2 The structure

A labelled diagram of our rider is shown in Figure 1. Some parts in the diagram are symmetric. Hence, they have only been labeled for the right side of the human figure.

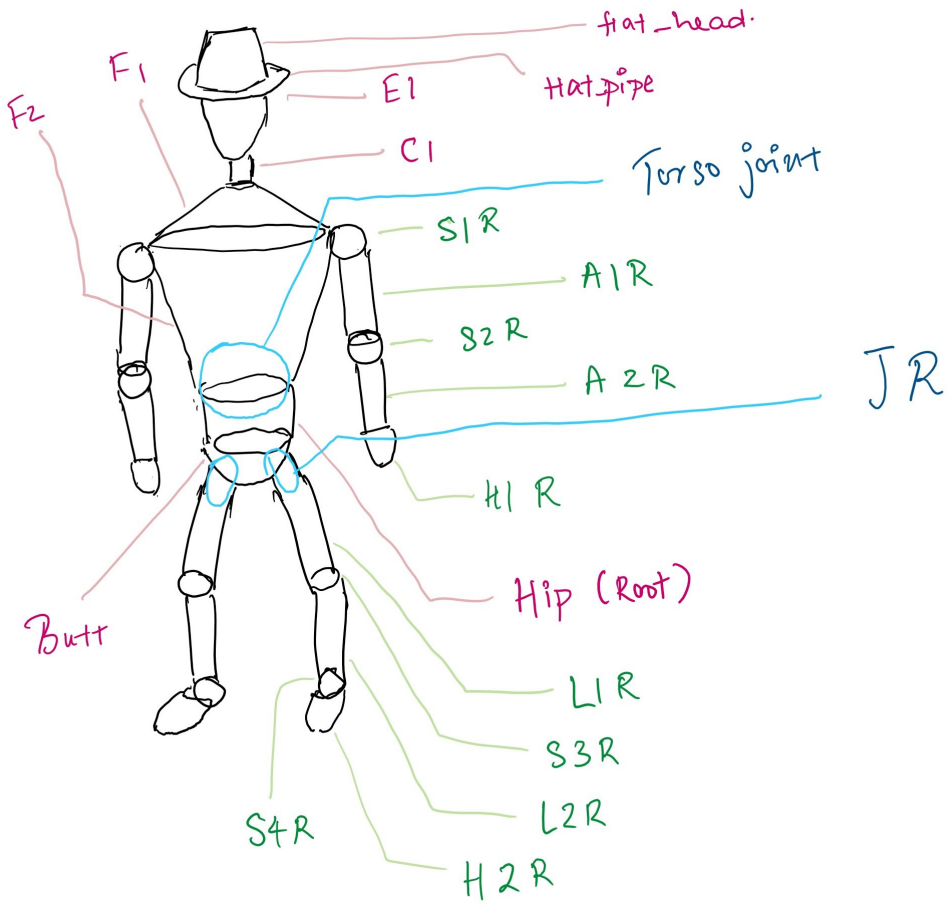

Figure 1: Rider diagram

The corresponding hierarchical model for this diagram is given in Figure 2. Here, the part found in the horizontally symmetric opposite end of the human model is labeled by replacing the last letter of the parts with L(eg: H2R becomes H2L).

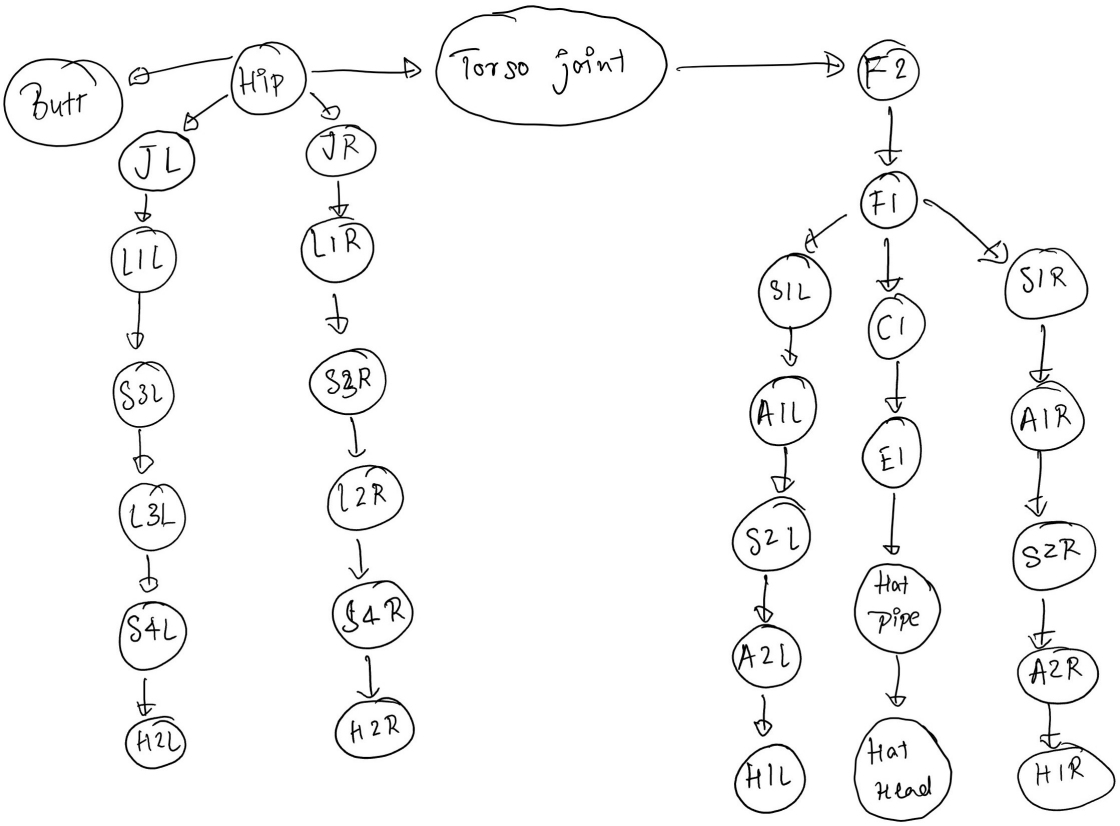

Figure 2: Hierarchical model of rider

3 Bike

3.1 Controls

Keyboard control	Function
/	Controls the Bike's Root
1	Controls the bike handle
2	Controls the front wheel
3	Controls the back wheel height

Table 3: Bike Controls

The above mentioned commands works as a switch to shift control between objects. As all of them have only 1 dof, you can control these by using the ↑ and ↓ keys.

3.2 The structure

A labelled diagram of our bike is shown in Figure 3. The corresponding hierarchical model is shown in Figure 4.

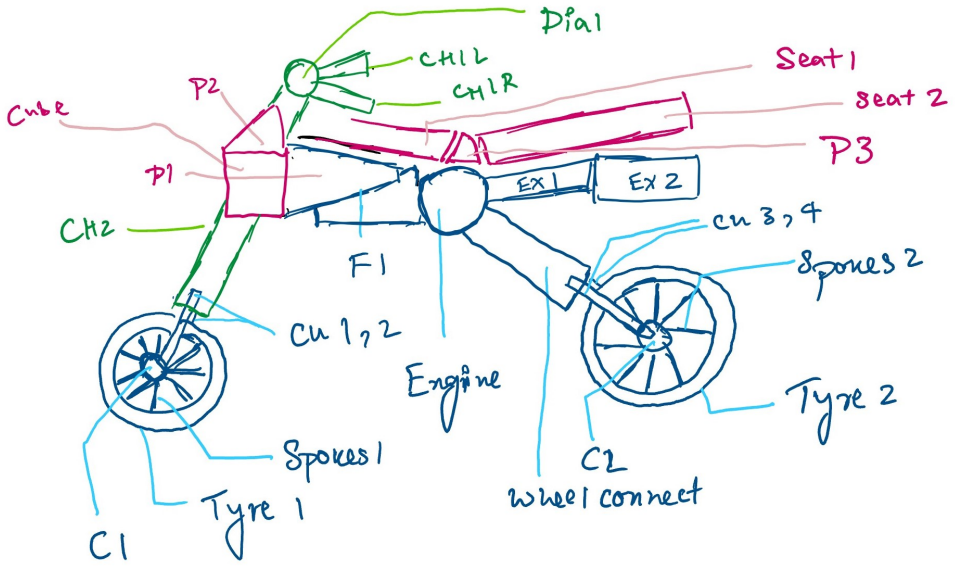

Figure 3: Bike Diagram

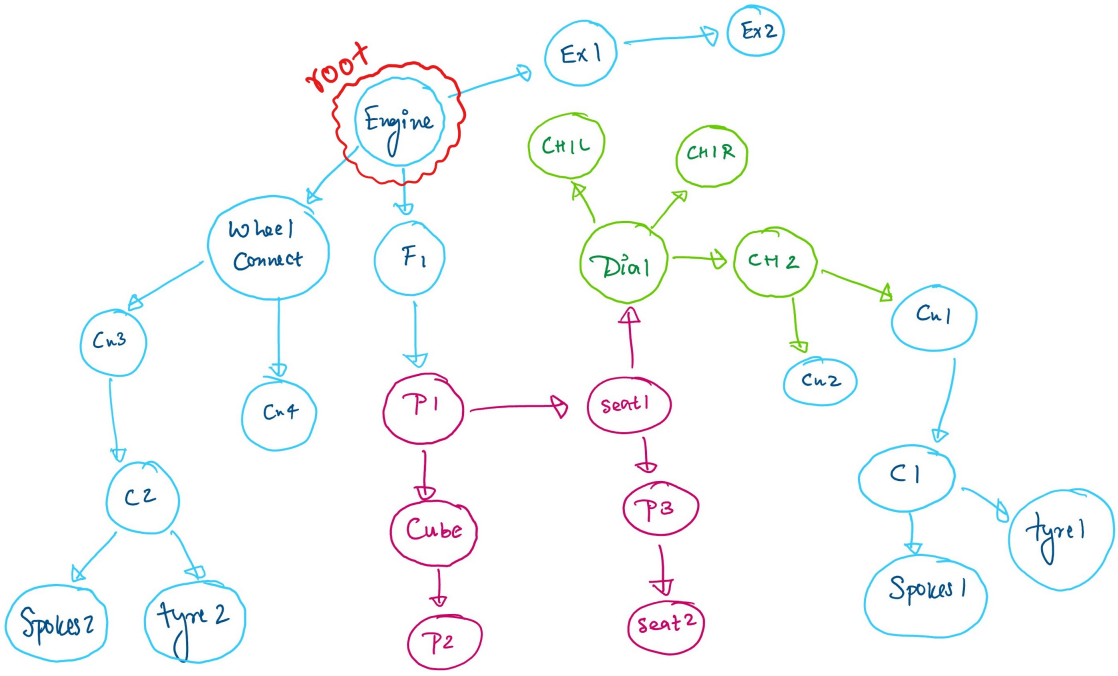

Figure 4: Hierarchical model of Bike

4 Track

4.1 Controls

The default camera setting is Camera1, that is full view camera. So, we can move around the scene using the controls mentioned in 4. Now, if we want to toggle between cameras we use C. Also, there is a special Global Mode, which can be toggled using Z. In, global mode we can control our models, that is our Rider and Bike. To control the models we first have to select the node, check 3 and 1. To toggle between models, we use V. Also note that, in global mode we lose control of lights and camera.

4.2 The structure

The track consists of many straight paths placed in a loop. There are different obstacles placed around the track. Each obstacle is a child of a sheet and all the sheets have a common parent in our hierarchical model.

5 Other controls

Control	Function
1	TrackLight1 toggle
2	TrackLight2 toggle
3	Rider Spotlight toggle
4	Bike Headlight toggle
S	Store KeyFrame
X	Delete Keyframe file
L	Load keyframes
P	Play Animation
C	Camera Toggle
V	Model Toggle
Z	Global switch
D	Translate left
G	Translate Right
F	Translate Down
R	Translate Up
↑	Rotate Up
↓	Rotate Down
←	Rotate Left
→	Rotate Right

Table 4: Misc Controls

6 Note

The skybox was working properly on Ubuntu, but then we started working on mac, somehow it's not working now.

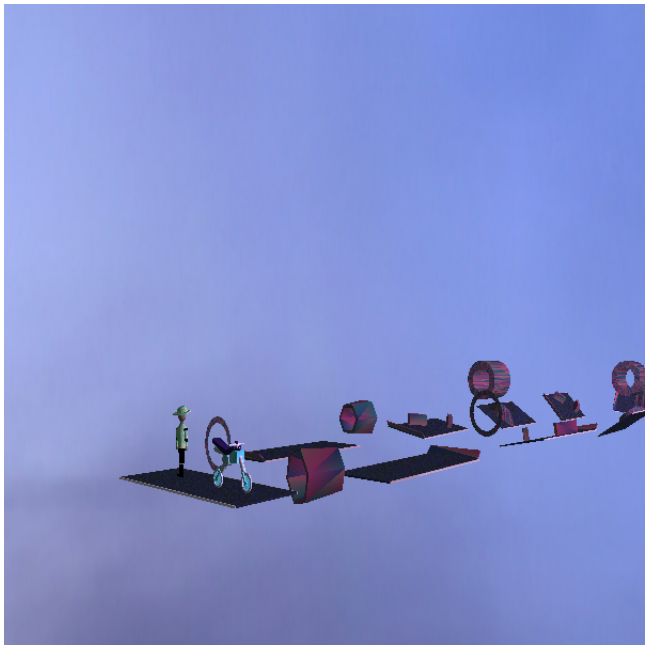

Figure 5: Texture