

# CMPT766 - Computer Animation

## Maya Assignment: Create locomotion animations (10 points)

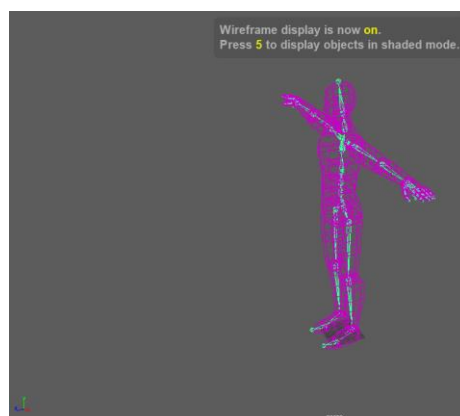
Due date: **23:59 Thursday October 31, 2024**

In this assignment, you are going to create stomp run and stomp walk cycles for a skeleton character.

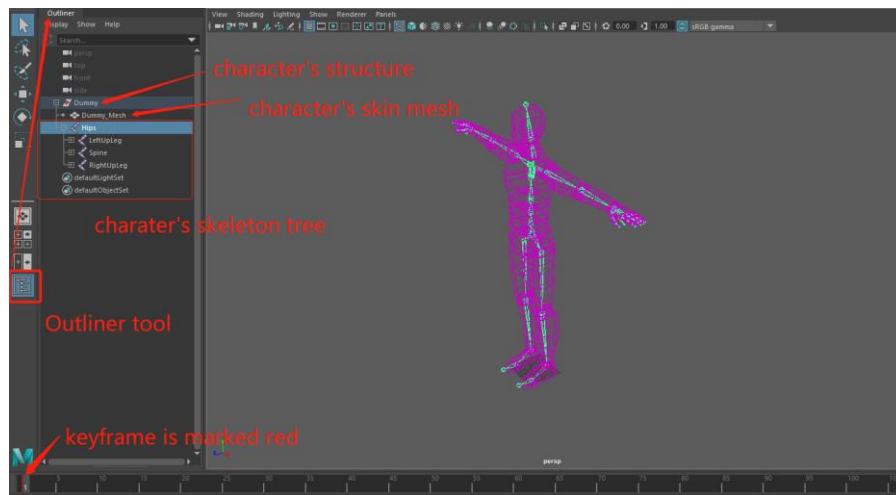
1. First cycle (**running**) should be created using only Forward Kinematics.
2. For the second cycle (**walking**) you should use Inverse Kinematics.

### Project File

1. Download the [CMPT766\\_Maya\\_Assignment.zip](#), extract it and you would get [CMPT766\\_Maya\\_Assignment.mb](#). Since you would be working on two separate cycles, we suggest duplicating the '.mb' file, so that you can work on FK in one and on IK in the other one.
2. You can open the '.mb' by double clicking it directly or import it to Maya.
3. By default, a 'T' pose humanoid character is created pointing to the positive z direction. You can switch between wireframe and shaded mode to view the skin mesh and the skeleton inside the mesh, **by pressing '4' and '5' on your keyboard**.



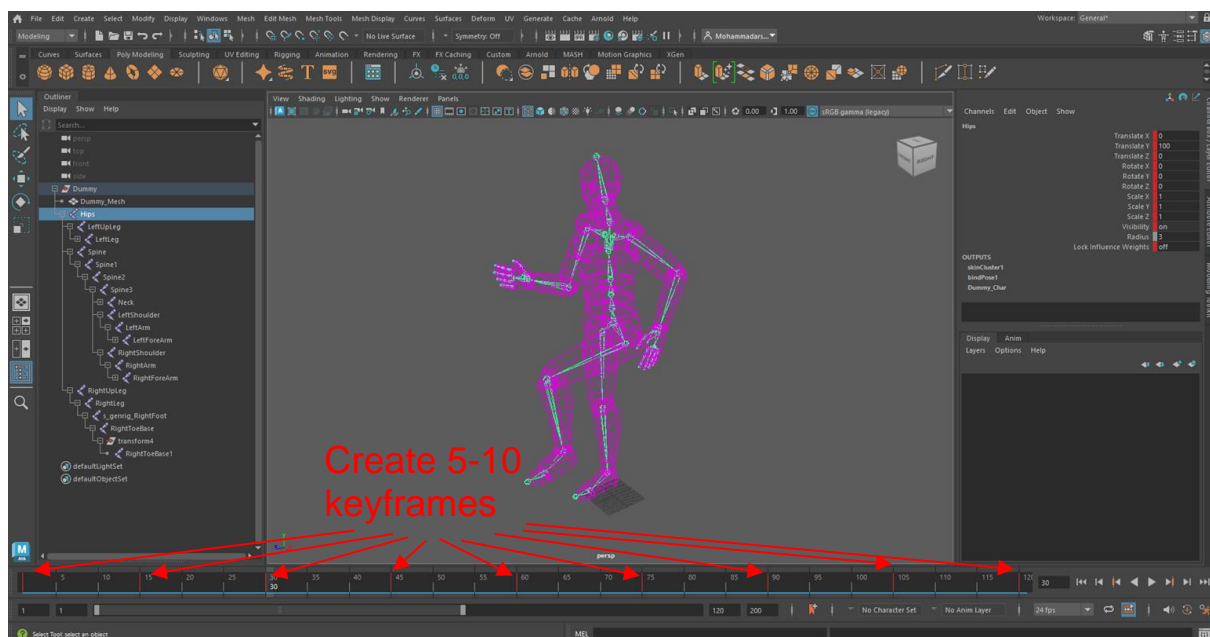
- The skeleton can be accessed and selected by **Outliner Tool** (the last tool listed in Tool Box). The hips joint is defined as the root. Once the root is selected, the entire sub-tree of the root is selected.



## Forward Kinematics Instructions

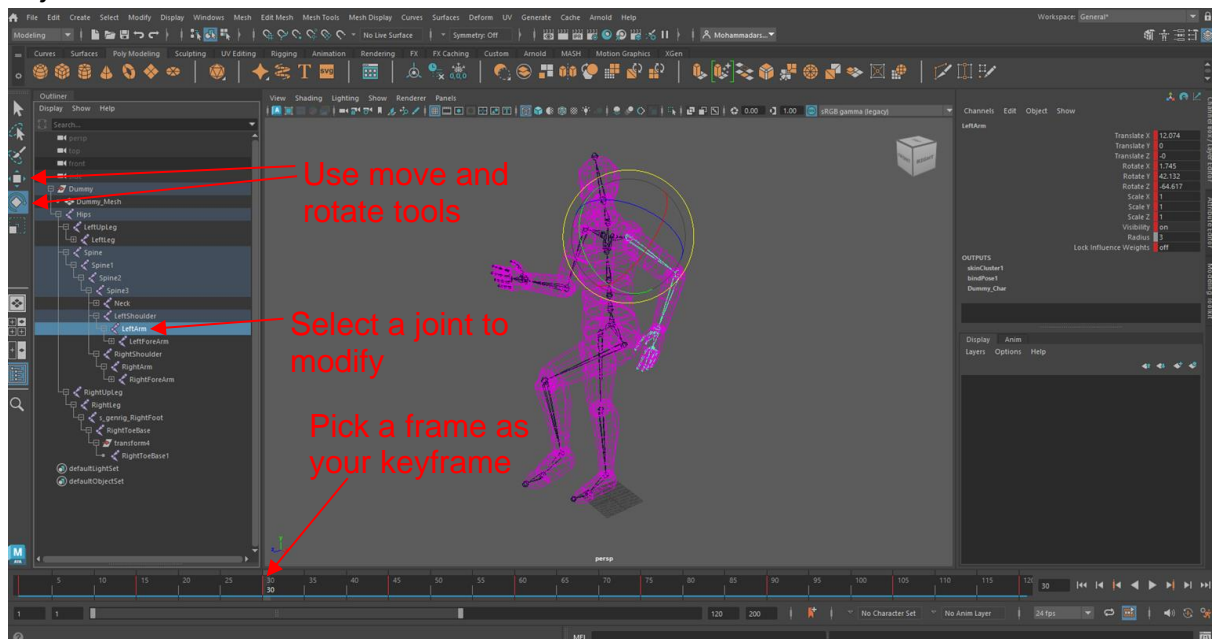
Reference motion: [Link 1 \(the run part\)](#)

We suggest creating **5-10 keyframes** for **one full running cycle**, i.e., two steps. You can adjust the number of frames in your animation as needed.

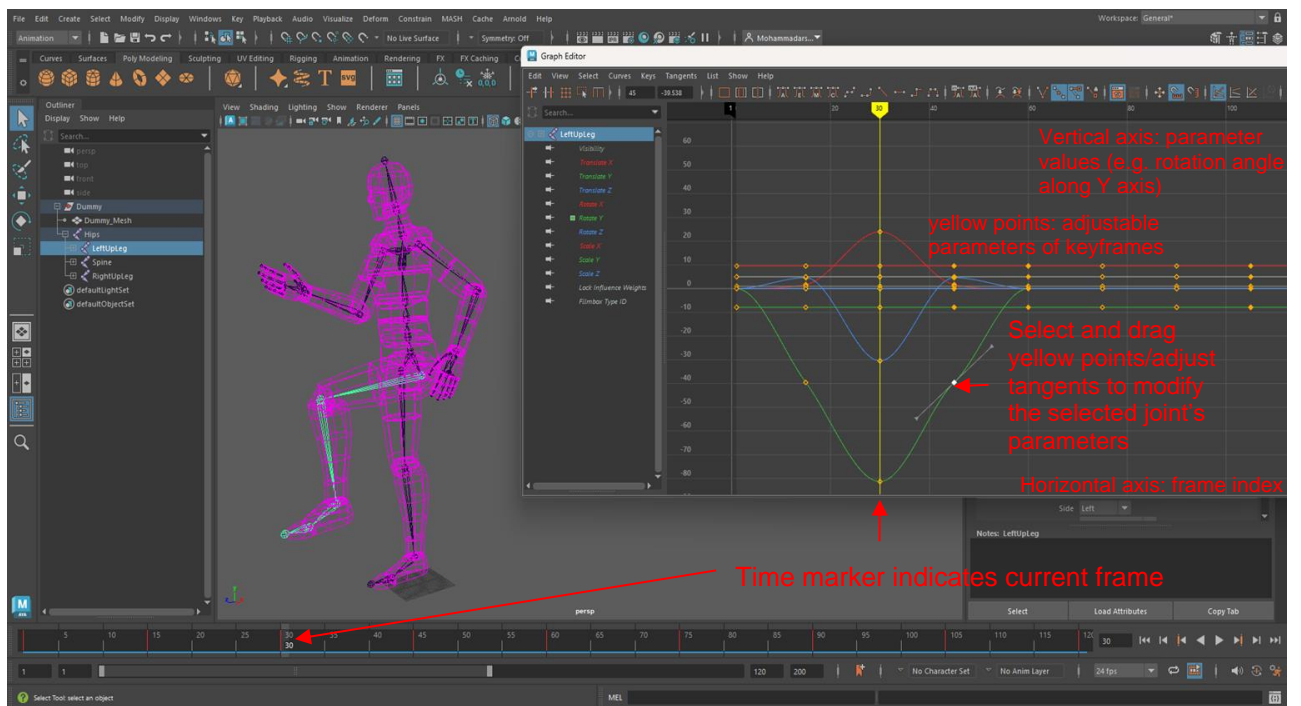


## Tips:

1. Use rotate and move tools to adjust the joints' rotation and translation at each keyframe.



2. Use **S** or **Key->Set Key** to set keyframes for **each joint** (not only hip joint)
3. Use the **Graph Editor** (Windows->Animation Editors->Graph Editor) tool to further modify the rotation and translation for each joint. Typically, we desire a **smooth curve** for more natural motions. Check more details of the graph editor tool on Maya official website link: [here](#)



# Inverse Kinematics Instructions

Reference Motion: [Link 2](#)

For the second cycle, Inverse Kinematics Tool should be used:

1. switch to the **Rigging** menu set.
2. Go to **Skeleton > Create IK Handle > □ (Options)**. Set the current solver to **Rotate-Plane Solver**. Leave other settings as default.
3. Now go to **Skeleton > Create IK Handle**. Click on the **LeftUpLeg** joint and the **LeftFoot** joint. This will create an IK handle from the **LeftUpLeg** joint to the **LeftFoot**. The **LeftFoot** is the end effector.



Again, here as well, you would have to create one stomp walk cycle (i.e. two steps).

## Important Notes:

1. Remember to set keyframes (hotkey 'S' or Key->Set Key) for **each joint** after your modification. Otherwise, you will lose all your changes!
2. Your character's final motion should look natural without foot sliding on the ground.
3. Your character should move forward in space, rather than run/walk in place.

## Submission & Grading

Please submit a zip file with your student number and name (i.e., **300000001\_TerryFox.zip**). The zip file will only contain your **CMPT766\_Maya\_AssignmentFK.mb** and **CMPT766\_Maya\_AssignmentIK.mb** files.

The TA will grade your files with the following grading rules:

1. Full stomp run cycle with FK (5/10 points)
2. Full stomp walk cycle with IK (5/10 points)