

# Fred the Robot Documentation

Where do I find the external files needed to create my own animations in Maya 2017 / Maya LT?

The external .mb, .fbx, and .obj files that have been exported from the scene used in Maya 2017 to create the animations can be found in the “ExternalFiles” folder. If you do not have access to Maya, a supplied .fbx and .obj export from Maya 2017 has also been included.

## Animation Controls / Bone / Joint Outlines:

The follow joint outline contains a list of the joints, and how each joint functions in relation to the robot.

The following are based in relation to the default standing pose:

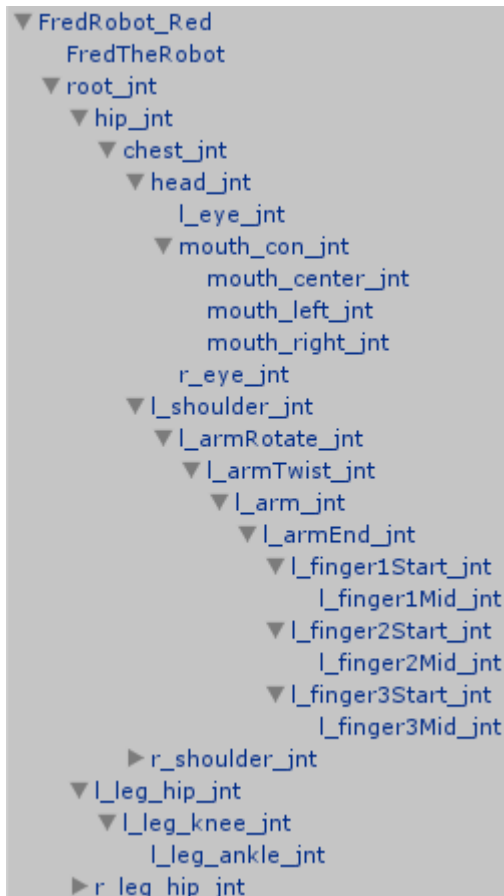
Forward/backwards rotation is used to mean the direction in which the robot is facing.

In/out rotation is used to describe rotate away from the center of the body along it's left/right plane.

Twist rotation is used to describe a twisting motion in relation to previous joints.

The side of the body on which the joint resides and controls is designated by the prefix l\_ for left, and r\_ for right. Explanations for left joints apply similarly to right joints.

## Bones:



root\_jnt: root of the bone hierarchy

hip\_jnt: hip joint of the robot; it is attached to both legs and the chest. Primarily used to rotate the hips forwards or backwards.

chest\_jnt: joint of the center part of the body; it is attached to the arms and head. Used for twist rotation of the upper body. Can also be used to have the chest translate up and down slightly from the hips.

head\_jnt: controls the head; it is attached to the mouth, and eyes. Used for twist rotation of the head. Can also be used to have the head bob up and down slightly from the chest.

l\_eyeball\_jnt: controls the orientation of the eyeball of the robot.

mouth\_con\_jnt: extra joint used to connect the mouth joints to the head joint.

mouth\_center\_jnt: used to control the shape of the mouth, modify through translation properties to squash/stretch the mouth.

mouth\_left\_jnt / mouth\_right\_jnt: the right and left attachment points of the mouth to the head, should not be

Figure 1: In-Engine Hierarchy of Bones

moved to ensure mouth stays connected properly to head.

`l_shoulder_jnt`: controls the shoulder of the body; it is primarily used to rotate the shoulder forwards and backwards.

`l_armRotate_jnt`: used for in/out rotation of the arm.

`l_armTwist_jnt`: used to twist the arm of the robot.

`l_arm_jnt` & `l_armEnd_jnt`: extra joints used for connection of the previous joints to the finger joints.

`l_fingerStart_jnt`: the start of the finger joint that connects to the arm of the robot.

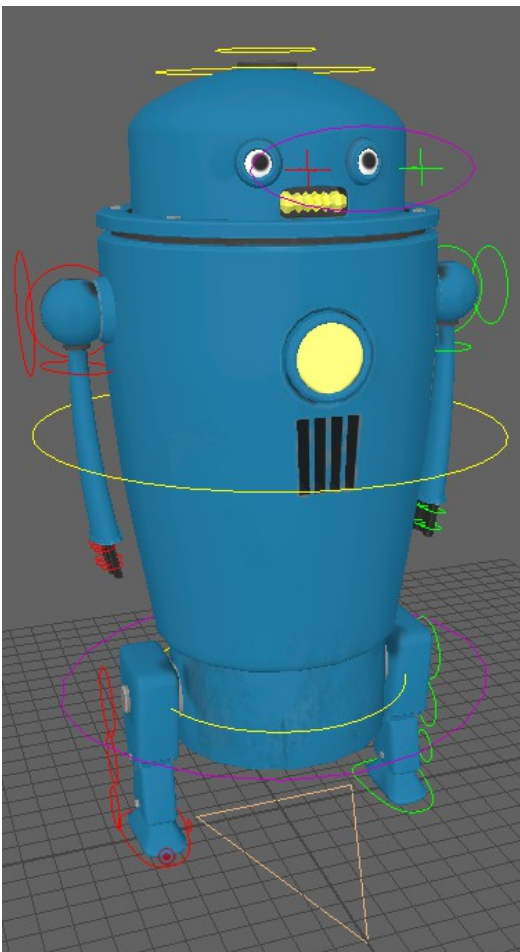
`l_fingerMid_jnt`: the middle to end of the finger is rotated with this joint.

`l_leg_hip_jnt`: controls the thigh rotation of the robot. Used for forward/backward rotation of the upper leg.

`l_leg_knee_jnt`: the knee joint of the robot. Used for forward/backward rotation of the lower leg.

`l_leg_ankle_jnt`: the ankle of the robot. Used for forward-backward rotation of the foot.

### Joint / Animation Controls for Maya:



The supplied scene for Maya / Maya LT can be found in the “ExtraFiles” folder.

All of the controls within the scene are named and used similarly to the joints listed above. The controls all end with the suffix “\_ctrl” instead of “\_jnt”.

To reset the robot to the default pose, simply zero out all of the transformations (Translate X,Y,Z, Rotation X,Y,Z, and Scale X,Y,Z) of the controls.

Helpful quick select sets have been created for easy selection of controls and joints.

Additional controls that are not directly related to joints are the sag control, and the cog control. The sag control simply moves all of the joints in the heirarchy. The cog control controls the position of the hips in relation to the IK legs.

Legs: IK controls are listed with the suffix `_ik_ctrl`. All other controls are FK controls. For the FK controls of the legs to be enabled, the IK curve of the legs must first be disabled.

Eyes: `eye_all_ctrl` is used to move both eye locators at the same time. `l/r_eye_ctrl` can be used to control the aim of each eye individually.

Figure 2: Image of Controls within Maya  
2017

**Questions / Comments / Concerns / Suggestions? Need help using this product?**

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