# Module 9: Session 1
Game Animation Production
The ¼ Turn

Well now that we have some of the easier animations under our belt what say you we try a hard one. The ¼ turn is a deceptively difficult animation to pull off. Your saying "what the h-e-double hockey sticks is a ¼ turn. I've played loads of games and the turn always spins all the way around." Well grasshopper in Game Land for some reason the programmer like to give the player total control. (shhhheeeesh, I know) So in that spirit you must be able to break out of a turn at a instants notice and depending on where you arms and legs are this might not blend so well. What's the answer? We try to minimize the damage. We create an animation that repeats four times to make a perfect circle. Thus giving us four chances to be closer to the zed frame. By the way that's why we call it a ¼ turn.
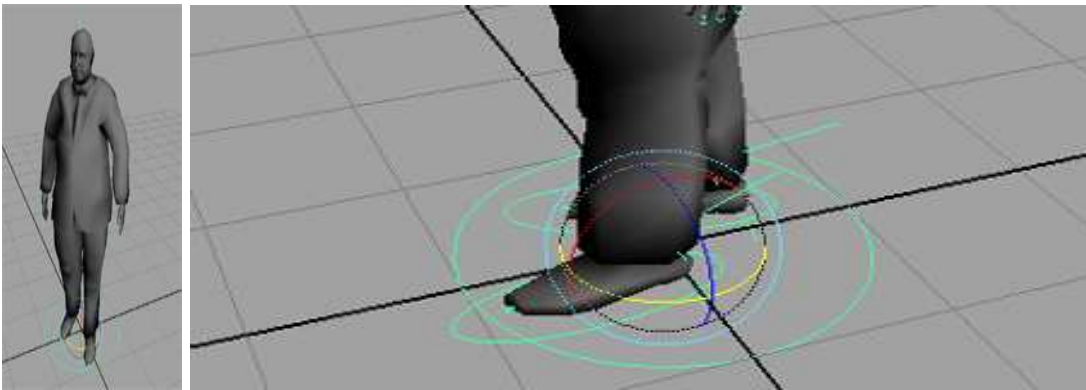
Rotate the Uber Node

Now to get this thing started call up your Zed frame. We are going to be turning right or clockwise 90*. Now the hard part of this is we have to rotate the uber mover to get there because when we are done we have to delete the rotational animation off of said uber node for it will be Mr. Progamer spinning our friend in the game, not us. That's right the character has to never leave its default orientation.

Confused? Let me explain. Set your time slider to x0 thru x20. Now I like to start by stamping frame x1 to x20 which gives us the bookends to this animation. Then what do we do? What else, we rotate the uber node 90 degrees to the right. This gives us our playing field.

Now the main problem with this animation is the feet sliding. Because we are moving the uber node and the IK handles are attached to the uber node there are no sticky feet. Which is good since we are going to delete the uber node animation later (It is just for reference) So we get old school on it's arse. We move the foot and place a marker on the ground to use as reference of where the foot should be. But not yet because this animation starts with the hips. Twist the hips on frame x10 more than you think you

Frame x10

should to the right. Now slide the character so the weight is over the front foot. Now twist on frame x10 the front foot back to the center line to where it started. Now slightly lift the right leg. On frame X10 put the right foot down and bring the characters weight over the knee. Then on frame x17 lift the left foot ever so lightly up and let the frame on x20 pull on it a little.

Now if you look at you characters feet while he's play blasting they sort of skate all over the place. We need to go and tie those down and here is where you can use those old school markers.
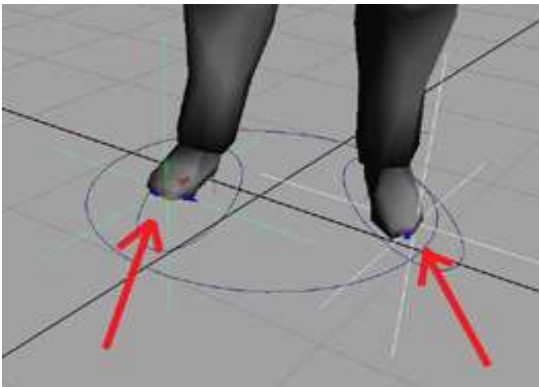
Markers to track feet

I used locators because they can be hidden with out having to add them to a layer (I'm just lazy that way.) I placed one at the toe of the foot that needs to be planted for the first half of the animation and one at the toe of the other foot at the final position. This allows me to see where the first foot needs to be even though the ground is spinning below it. The one on the other foot tells me where I have to end up. OK so now you have your markers and it's time to dance. I find this to be the hardest part of the animation as it requires a lot of move this foot back, slide the hips over move the leg out. And so on and so on. If you would like to see the exact frames I used I have saved a version for you called Doug Quarter Turn. Ok now try that out, and make sure you keep adjusting the root (hips) to be over the planted foot at all times. Keep checking it in the front and side views. Non orthographic views, like Perspective can you a false sense of placement.

Module 9: Session 2
Game Animation Production
# The ¼ Turn Upper Body

You have probably guessed that the meat of this animation is in the feet. The upper body could be doing almost anything and as long as the feet are moving correctly the animation will work. This being said it is no excuse for goofing off. This is a good chance to work on some overlapping animation. Now for those of you who do not know what that is let me explain. While the feet are moving around doing there thing we move the upper body at a slightly different key set. So if the legs are on x0, x10, x20 then the arms are on x7, and x14 or something. The key placement usually has more to due with the motion then a key pattern. So let's do that now.

Frame x3

So on frame x3 I started with the belly and rotated it clockwise a tad and then I went up a join to the chest and did the same for that. If you are doing a full body twist like this you want to spread out your twist through all the joints involved. This means one joint isn't cranked way out and the others are not even touched. Les stress on the joints means a cleaner animation. It also reads better. I also lifted and rotated the arm, wrist, and hand, a little Finally I moved the head to look where he will be going.
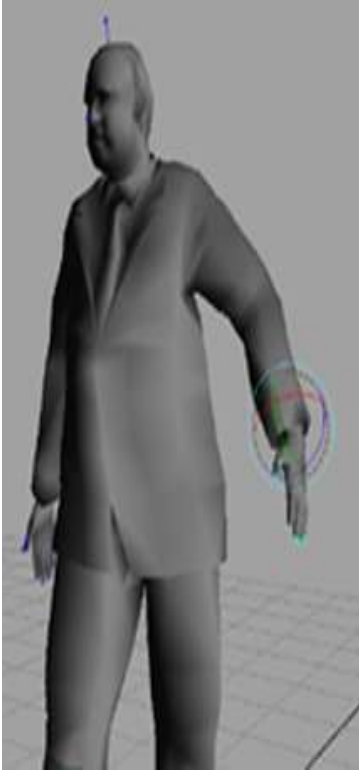
Frame x10

On frame just to mix it up a bit I rotated the left arm up a tad that way the left and the right arm arrive at different rates. (It looks more realistic).

Module 9: Session 3
Game Animation Production
The ¼ Turn, The Big Finish

All right well done and all that. Now it's time for the final bit of business with our friend here. In order to export this into a game engine we need to take the last key off of the uber node. So delete frame x20 and leave frame x0 or you can delete it I don't care and it doesn't matter. Now play your animation. It would have been fairly difficult to create that without traveling the route we did. The moving of the uber node simplifies things quite a bit. What is the main lesson we learned here today? Sometimes you need to create helpers to get your animation to do what you want it to do. Ask your friends and see what unique devices they use to help obtain a great animation. Maybe they'll give you some you have never seen before. Because we can all get by with a few helpers from our friends
(sorry I had to write that)

Module 9: Session 4
Game Animation Production
The Fire

The fire animation is a very short sweet one. Because of the way it needs to repeat, it is usually only around 10 frames. With this animation there is always the chance of a lot of looping as you might have to hold the fire button down for some time to kill off that end boss. It starts with a zed pose (preferably with a gun in hand) and on frame x2 you do an extreme recoil. Once again because we may need to break out of it at any second it can't be too off from the zed yet it has to look like something has happened. So we need to take this recoil frame and ham it up a bit. The rest of the animation is spent getting back to the zed pose in an interesting way. Now this is the recipe for a single shot weapon of course there are modifications to the animation for machine gun fire and heavy artillery. Although in each of these the basic form remains the same.
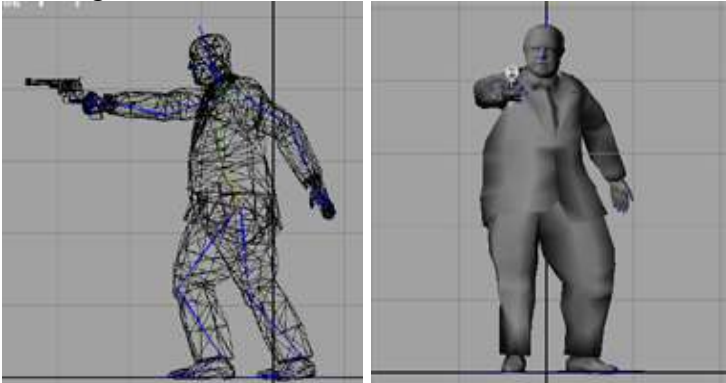

Fire Zed Pose   **Front**

Let's try one out. I have included a Fire Zed pose with a hand gun. Because it is a single fire weapon held with one hand I have twisted the hips to support the posture. I rotated the back arm up a bit to balance out the pose as he is leaning pretty far forward. The left foot I rotated out a bit and I lowered the hips to take the sever bend out of the back leg. Finally I rotated the belly and the chest to smooth out the twist on the torso.

Now for the Recoil bit. First stamp keys for the entire body on frame x0 and x10. Now go to frame x2 and select the hips translate them back and up a bit. Then go to the belly and rotate it to the right and the chest as well. Now grab the right arm and rotate it up. Do the same with the wrist and the hand. If you need to rotate the head back, you want to maintain a forward facing view.
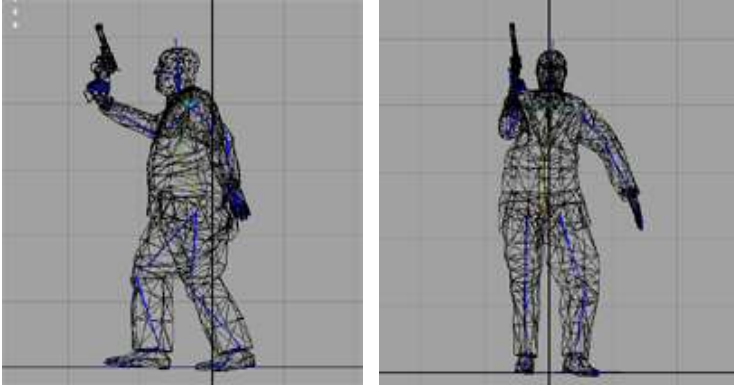
Frame x2

Hit play and check out your sweet fire animation. Now as sweet as it is we are going to make it a little better with some overlap animation. I find with a 10 frame animation there isn't a lot of room for fancy keys so let's just add one or two.
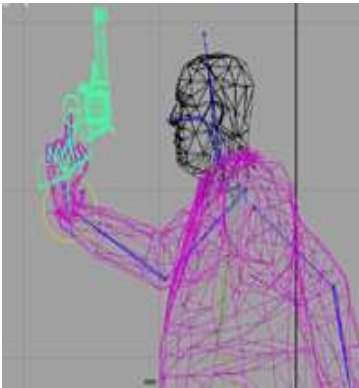
Go to frame x6 and rotate the wrist up a little and then rotate the hand up a little. Now play the animation and you can see that the hand returns to the zed position at a different rate than the rest of the body. Once again by using overlapping animations we have made the perfect game fire and in only four key poses. Well done. Do I need to pull out the you rock picture again?

Module 9: Session 5
Game Animation Production
The Fire (Rapid) (Mortar)

Don't get cocky kid,

We still have a couple of fires variations to run through. Now the rapid fire animation starts the same way except now put a machine gun in your characters hand for the zed fire frame. Animate frame x1 much like we did frame x2 before. With the same sort of recoil. Except now we are going to copy frame 1 to frames x5 and x8. Then go to frame x0 and copy it to frame x3 and x7. Now add a muzzle flash and hit play. (It's ok if you don't have a muzzle flash on you.)

Rapid Fire Zed Pose   **Mortar Fire frame x2**

Now the last one is a mortar fire. Set you time slider to 20 frames. The animation is set up the same way as the others except on frame x2 you really push the pose to show tremendous energy release. Then you hold it for five frames. I like to put in a little drift on the root node here. Then I copy frame x0 to frames x12 and x20. On frame x17 I translate the weight of the character to be over the left foot and I translate the root node up to just before the leg fully extends. That way when get toward his final frame he has a nice settle. Now delete the animation on the right foot between frame x7 and x17 and we are done. Hit play, and have fun destroying the universe Danny.
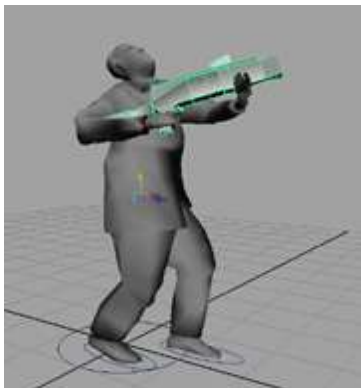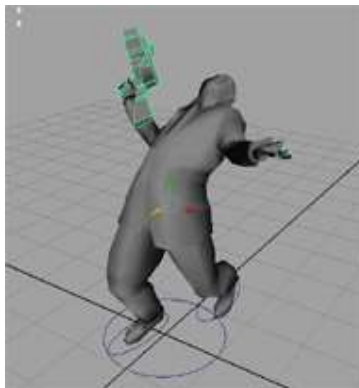
Module 9: Session 6
Game Animation Production
The Hit_small

The hit, is basically an animation used to show varying degrees of damage on the character while in combat. This course means that depending on who he is, and what the he is using to attack you the animation could vary greatly. Let's just say for the sake of argument that in this case the bad guy is using a magnum/shotgun style gun. The hits are single point impact. We will do three different ones. I light graze (hit_small) a medium impact (hit_med) and a knock you on your ass. (hit_big).

The **hit_small** is an easy one to do. In many ways it's like the gun fire we just did. Set your time slider to 10 frames. On frame x0 and x10 stamp your zed pose. On frame x1 translate the root back and down a tiny bit and rotate it the opposite way of the fire so they don't get confused. I usually grab both the shoulder bones at the same time to do this rotation. Now I hardly ever take the left and off the gun at this level of hit but if you feel the need go ahead. Remember though, you need to do two more of these animations and you want them to be noticeably different. Now rotate the head back like he just got hit by an uppercut. Now play it. If there are no pops you most likely will not need to add any overlapping animation and you are good to go. I of course was not good to go and I had to add some movement on frame x7 to smooth things out.
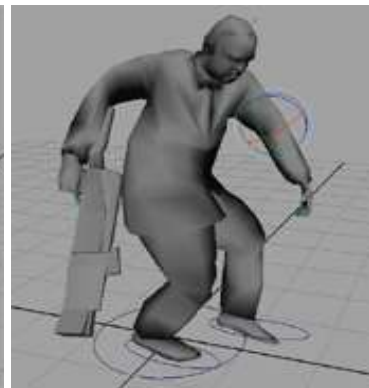
Hit_small   **Hit_med**   **Frame x10**

Module 9: Session 7
Game Animation Production
The Hit_med

The **hit_med** takes it one step further. It actually knocks the character back a step and stuns him for a bit. We can actually take the animation we just did and on frame x1 push

the pose to where we need it. So just so we are clear. We keep frames x0 and x10 and we go to frame x1 and push it further. Let's also give our selves more time. Set the slider to 20 frames. Take frame x0 and copy it to frame x20. Delete all the frames between frame x2 and x10. Change x1 to the extreme level you need and copy it to frame x7 or give it a 5 frame hold. Once again on x7 I twisted and translated the root node a tiny bit to give it some drift. On frame x10 we are going to reverse engineer a pose. We have it at it's final destination and we are just going to rotate the pose out to be close to where we ant it to end up and frame x1. You can see how I did it in shot *frame x10*. Now with this kind of an animation that has to reset at the end I like to add some anticipation or a frame of animation that is moving in the opposite direction or with reversed lines of action to that of the destination key frame. It sort of punctuates that final key. So on frame x17 translated the root up and the arms out away from the final position. And on frame x20 We are back hoe again. Now play your animation and check for things that might need fixing and of course please fix them. Ok enough of the simple stuff on to the hard one.

Module 9: Session 8
Game Animation Production
The Hit_big

Hit_big is the animation that you play when a mortar goes off in front of you. It knocks you back some and lays you out flat. It is usually followed by either not getting up and dieing or a get up animation. So let's get animating. Call up your **mortar_zed** file and set your time slider to 30 frames. Go to frame x1 and translate the character's uber node (the big circle on the ground) and translate it back about two game feet. Now translate the root up a bit and rotate the hands and feet to look as if something has hit him in the gut and has blown him off his feet. You can act it out in front of a mirror if you need to. Go to frame x5 and translate the uber node back six game feet and down a little on the root node. Rotate the feet up a bit (overlap animation alert).
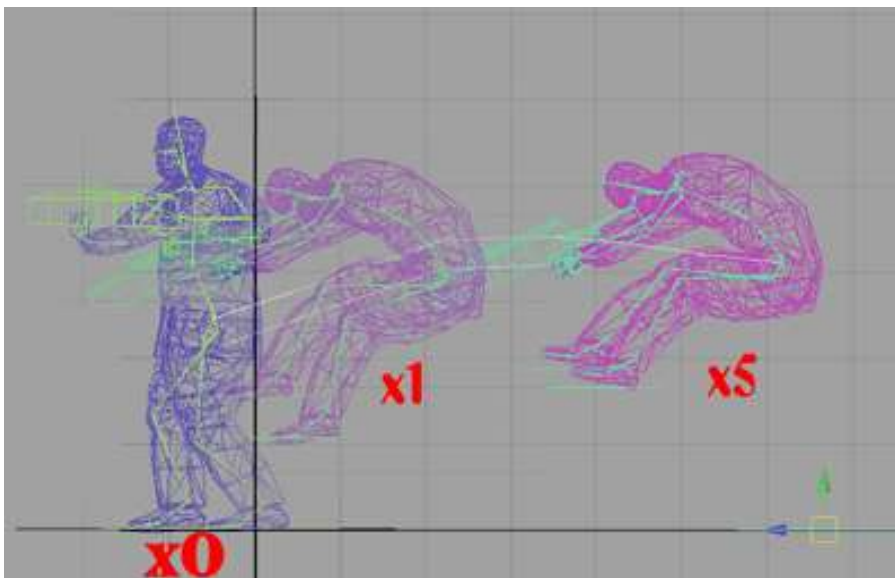
Now depending on your Maya prowess you might know about a thing called the **Motion Trail.** If not it's sort of like a curve on the graph editor but right on your screen with your character. I know it's like voodoo magic. Well it would be if it actually worked but lets just say it has issues. Anyways I like to bring it up on animations like this so as I can track the arch (archs are important see animation 101if confused) So… in the animation module go to the animate tab and select the option box on create motion tral. Select time slider and fast update and draw style line. I hate all the other options they are like so over the top.
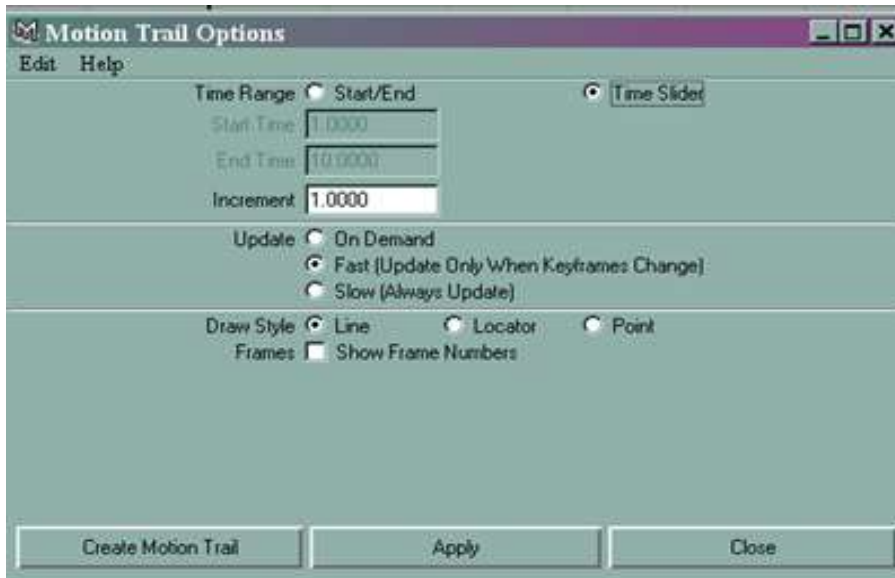
Now in the main window make sure you have Show/locators checked or you will not be able to see it. One last little bit of advice if it seems buggy it is working as it always has and you should swear a lot and continue as best you can. Oh and if you want to get rid of it, all you have to do is select the actual line, and hit delete. It is an actual object. (Who knew?).

Cool are good with the motion trail thing? Great! Back to the animation. Go to frame x7 and translate the root back, and down, so as our friends butt is on the ground and his arms and legs are still in the air. Do not move the uber node just the root O.K. Now on frame x8 translate the body about 2 game feet in the Z and make the entire body hit the ground arms and legs included. Now on frame x10 translate the root up about six game inches but make sure the hands and feet stay near the ground.. Now go to frame x13 and translate all the arms and legs back to the ground as well as the body and about two game feet in the Z.

Now go to frame x20 and pose character in a proper dead style pose and translate the root and six inches in the Z axis. I some times tack about ten frames on to this hit and do and extreme settle meaning I twist a few limbs even further as if the muscle was giving out. It's a nice touch. Ok that is the basics of this animation. There are certain finesse points you can work in but this is a pretty solid hit_big.

Assignment 9.1: Some Animations

Project 9: Fire Hit and Turn

Description: Do at least one hit, one fire, and the quarter turn using your own character.

Purpose : To learn more of the basic game animation techniques

Tools
Maya or 3Ds Max

Due Date
The assignment is due on the last day of this module.

Submission Directions
Please submit your work as a .MB file

Grading Criteria

You will only be graded on whether or not you turn in this assignment on time. However you will receive a critique of your work and suggestions for improvement if necessary

Module 9: Session 10
Summary

In this weeks class you have learned to do some of the less sexy but very necessary animations. My hope is that you will take these basic steps and add your own flavor to your animations. I find that far more interesting than just following my lead.

Discussion:

The discussion area is an extension of the classroom, where collaborative learning can take place. In other words, the instructor should not be the only one contributing to the discussion. Participation is mandatory and will be a portion of your grade, so be sure to participate regularly.

This week's discussion topic: What are the best fire animations you have ever seen. The first one that says the shark gun gets an F (I didn't do that one)

Glossary

*A list of glossary terms is available for most Modules of this course. This important resource can be accessed through the **Glossary** link in the left-hand navigation bar of the Module. CLICK HERE to review glossary terms used in this module.*