

## Free Trip in 3ds Max With DriverMaster

*For the animation of vehicles in 3ds Max there have always been different approaches. Earlier, you even received an extra plug-in when you were subscribed. The other methods are built with many constraints a separate rig or the handle for external plug-ins. Just the automatic turning of the individual wheels according to the respective route is a trip without a plug-in or script and often has to be recalculated if something changes along the route. Here I test a new script to make my work easier: DriverMaster by Efim Armand.*

*By Mike Kuhn*

The installation takes place in the usual way with Maxscript-Zip packages: The downloaded file is pushed into the 3ds Max viewport to get the license request code.

I applied for the code by e-mail Saturday evening at 18:30. Not that I expect everyone to have such working hours as I did, but due to a lack of demo-version I had no choice but to read the user manual. Nine pages later I was through - but had already my license. This is again a Maxscript package, and the installation is the same as when you generated the license code request.

Now I look at the videos. Five minutes later, I am finished here and turn to the Frequently Asked Questions. Of the five points listed, I particularly like this precise example: "Can I drive / flip the rig upside down? - No."

The information is still rather sparse. However, Efim Armand, the creator of this script, wrote on his own in the license activation mail that he was at the moment doing a detailed FAQ as well as a few video tutorials.

### Interface

In order to work with the new script, I have to paste it into my interface. So I go over the menu "Customize" into my Customize User Interface window and find it in the category "Efim\_Armand". From there, I can assign a shortcut to the script, drag it into a toolbar or make it available via a menu.

So I load my example scenes and first check my system units and sizes of the objects. As with realistic rendering or physical simulations, we should move in real dimensions. However, DriverMaster appears to some extent to manage with unrealistic dimensions. The wheels turn accordingly, but the body tilts and tapers so partially that it also runs the hardest sea-bear to the rail.

Next, I see if the objects to be used are in the correct coordinate system and are not internally distorted. Especially for the wheels one should make sure that the geometry carries with it no hidden, disproportionate scaling. Larger or smaller scaled objects could also cause problems because the system-internal scaling is different from what I see in the viewport. A reset Xform does not harm in case of uncertainty. The objects may also be instances, since this is a script that links the components to control objects. The vehicle should be aligned with the front on the negative y-axis, that is, in the top view, and the ground contact surfaces of the wheels should be on the Z-plane to 0.0.

## Rig and Setup

By clicking on DriverMaster, a Rig\_Main\_Controller\_001 is set into the scene, via which everything else is set up and controlled. Placing the rig is relatively simple. In the rollout of the Main\_Controller, the button for the Automatic Setup dialog is displayed. In this dialog box you have to click the button "Body" and then the 3D object, which is to be used for the body. For each individual wheel, this procedure is repeated accordingly. Alternatively you can define the brakes. This was actually synonymous for the basic setup. It is important to confirm with the OK key before selecting other objects, otherwise we will confuse the script. An accidental double-click on one of the components to be selected can then define this as an active model. Then you have to select the control object again, close the automatic setup dialog and start over.

Two new layers have been created. In the one is the DriverMaster control object and the other auxiliary objects created by the script and the other level that is hidden, the created Rig. After confirming I only have to select the control object and can push my vehicle forward and backward.

The wheels turn automatically according to the distance traveled.

## Application

This alone makes my mouth angle a little uphill, because I know from previous projects, that without such a script is not possible with so few clicks. From the manual setup for "turn around the curve" I will not even begin here. However, if I now create an animation by hand and let the vehicle drive a snake line, the wheels turn right, but they do not want to steer by themselves. For this I can animate all these settings in the rollout by hand and thus precisely define the behavior of the vehicle.

With DriverMaster, the easiest way to manage curves is by tying the control object to a path. For this purpose, there is a button directly in the rollout of the control object, via which I can select a path and bind the script automatically to a path constraint. The subtleties of the journey I set in the Motion panel. When using a freshly created spline as a path it may be that the vehicle makes funny jerks in the curves. This is due to the interpolation of the spline and can be improved if the interpolation from Optimize to Adaptive is made. So we have softer segments for the path. Even better results can be achieved with a Nurbs Curve.

The car body now automatically bends in the curves and also goes up or down in the front when starting or braking. However, I noticed that the wheel does not rotate around the pivot point I defined. Then I just have to use a hidden bike model for freestanding bikes, to which the real wheel is finally tied.

In the rollout of the control object, the behavior can be additionally influenced manually. Here you can animate an additional drift as well as the inclinations laterally and along the direction of travel. You can also put a burnout, because you can add a multiplier to the speed of the wheels in the rollout. Dynamics can also be switched on here and the body mass can be set.

Even the speed is displayed in the rollout. But at the moment this can not be easily combined with the Smart functions of the TextPlus object or Wiring.

A looping is probably not because, as we learned from the FAQ, the rig is not so easy to put on the back. However, you could bend the animation of an equivalent straight course and then animate the vehicle along the loop.

## **Driving test!**

Now to the horror in every driving test: the parallel parking. Reversing is easy because I have to invert only the animated percentage of the distance. To do this, I create three separate splines and make sure that the corresponding endpoints lie on each other. Now I add the two additional splines to my Path Constraint, animate the respective change of the influence weighting and let the model go from 0% to 100% for the first path path, then move back in the next section from 100% to 0% and go back to Front to 100% for the third section. The reward of my troubles is that the body behaves as I had planned, but the wheels take positions that would cause pain to every living being. It seems as if the other splines still influence the direction of the wheels, although their weighting in the path constraint was set to 0%.

Then I wrote at night around 2:00 am a mail to the developer and got very quickly an answer: My clever conceived technology does not seem to work with the script and the recommendation of him was, one should work with separate vehicles and Then show or hide the respective route. Since I was not enough, I dug deeper into the components created by the script.

What I could have actually thought before, now opened. The steering object, which affects the orientation of the front wheels, has its own controllers, which make it possible to view certain objects. By adding another view object with animated weighting, we were still in the parking area.

Probably it would have been easier from the beginning to animate the whole thing by hand via the settings in the rollout, instead of going over the splines. But you also want to know how far you can bend such a system.

## **Conclusion**

The handling is simple and fast. The system is not too rigid, so you can intervene and get the desired result. The joy of the user is not a hated apprentice, but a one-off payment of an amount which, in my opinion, is under the time it would cost me if I had to set up these functions for a project myself .

Of course you can also animate several vehicles, which would be cleaner for my taste, if each further control rig would get its own layer. The small remaining shortcomings will hopefully be minimized in the future.

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