Marty the Robot 3D Printing Instructions

So you've decided to print your own Marty. Brave, but commendable.

Printing the parts

The quantities you need of each part are given on the downloads page. As are recommended layer sizes and fill amounts.

Most parts will print without support - the exception being the side panel, which needs support.

For best results:
- Print several links at the same time, using the "print all at once option". This will give the layers of the small cylindrical shafts more time to cool, and produce much better results
- Same for the servo mounts and servo holders - the locator pins will come out best if you print more than one at a time

Finishing the parts
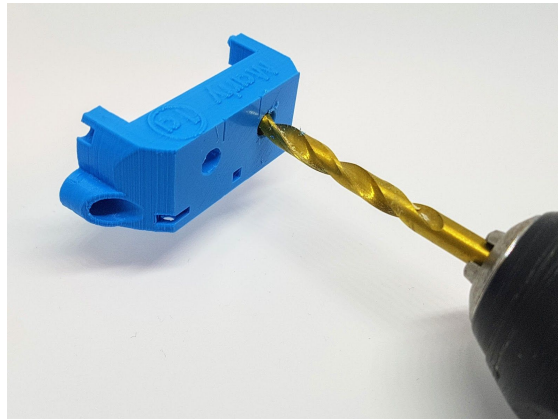
- Use a 5mm drill bit to clean out the bores on the servo holders and servo mounts
- Use a craft knife to tidy up any protrusions and 3D printer errors, for example to make the link shafts more round
- Make sure the link shafts turn freely in the servo mount and servo holder bores

Assembly

The build of 3D printed Marty is very similar to the normal build detailed here:
https://robotical.io/learn/article/Marty%20Build%20Guide/Introduction/

However, there are a couple of differences.

Thrust Washer
One of the main ones is in the knee, where there is an additional thrust washer component
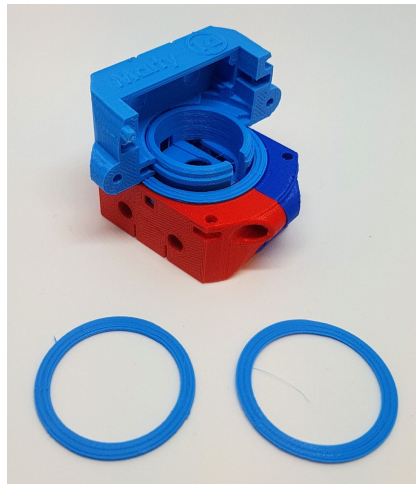
The thrust washer is placed in the middle of the knee assembly, as shown in the above photo

The thrust washer STL file has three different thicknesses of part. Use the one that fits best with your printed parts. You're looking for a nice smooth rotation without much friction.

Servo Alignment
When installing servos, ensure the horns are installed with the neutral position as close to Marty's standing position as possible. If you're using a servo set we've provided, the leg motors should be pre-calibrated. If not, use a servo tester to get the servo to the neutral position before installing the servo horn

Servo links
Two types of servo links are provided - ones for use with our custom servo horn, and ones for use with generic servo horns. Use the type you need.

Foot springs
Since we use custom made springs in production Marty, we modified the 3D printable design to use standard extension springs instead.
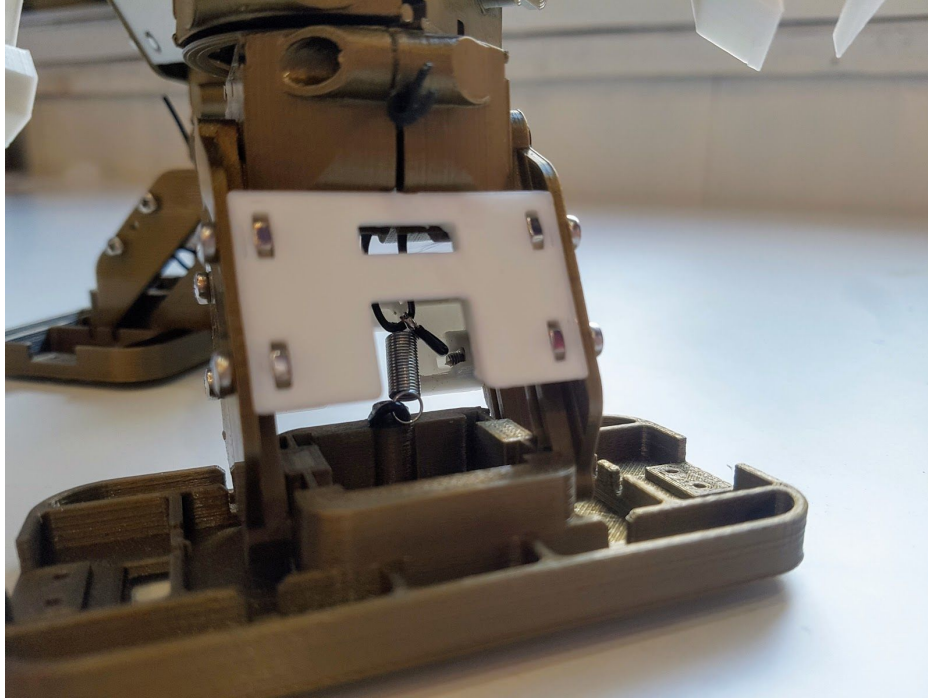
You can loop some wire through a small extension spring, and attach one end with a screw to the foot, and clamp the other end between the servo holder and servo mount of the lower knee assembly. Make sure you fit the springs so that the feet spring back when you push them inwards, but not outwards.