Twistr

INSTRUCTIONS FOR FABRICATION

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Distributed Design Market Platform

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1. Basic info

TWISTR is a parametric walking cane generated through a scanning made by a Kinect Cam.

Fig. 1. TWISTR: the final object (photo credits: Gabriele Renna)

BILL OF MATERIALS

The table below contains all the materials necessary for the reproduction of the product (consumables, electronics, components).

- 3 M3x10mm countersunk bolt hex
- 3 M3x16mm countersunk bolt hex

The estimated cost to materialize TWISTR is * euro,

TECHNOLOGY AND TOOLS USED

- 3d printing*
- Kinect Cam

*It is preferable to print the components in a
Carbon Fiber Reinforced Nylon filament, and optionally insert a steel pipe inside the inner hole to give ever more strength to the cane.

2. Step-by-step materialization

There are two different paths to have the .stl files in order to print this cane:

Step01A. the easiest way is to measure your height and check in the grid, which percentile you are.

Step02A. From the previous informations is easy to select the right files to select and download.

Step01B. The longer but more customizable way is to generate a parametric cane through the use of a Kinect cam. 3d modelling skills are required. Here a list of things that you need in order to proceed:

- a computer, preferably a Windows machine
- a Kinect Cam with its own driver already installed on your pc. Here a comprehensive guide by Pieter van der Hijden on how to connect and use a Kinect on your pc (https://www.instructables.com/id/How-to-Connect-a-Kinect/)
- Rhinoceros (V5 is recommended) installed on your machine, running correctly. Inside Rhinoceros there's a free plug-in available called Grasshopper (a node interface to generate complex geometry)
- Firefly (a free Grasshopper plugin) in order to let communicate an external device with Grasshopper. On their website you can find useful resource on the installation and the use (http://www.fireflyexperiments.com/resources)

Step02B, Download the project's resource folder contained the handle geometry, and the code running in Grasshopper (**before open the .gh file, install Firefly**).

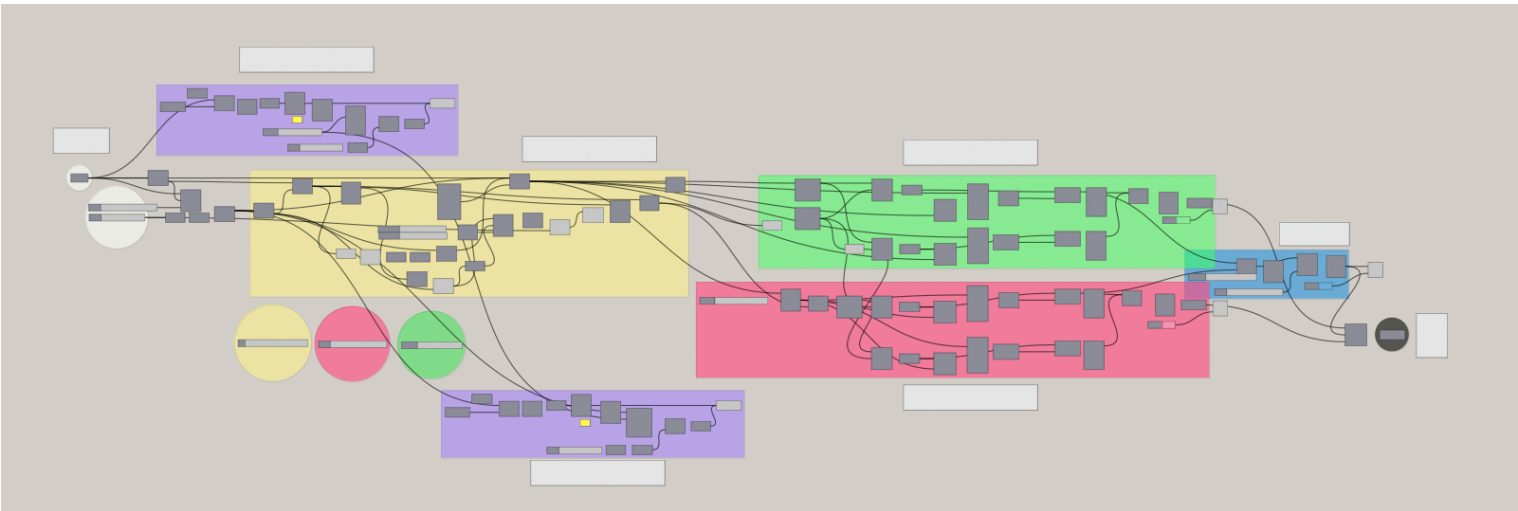

Fig. 4. Overview of the complete Grasshopper script.

Step03B. Open the Rhinoceros file and launch Grasshopper. The first see that you'll see when you open the Grasshopper script is a orange warning on the first element in the left top angle. That is because the Rhinoceros file and the Grasshopper file are not linked together when you first open them. Right click on the warning element, then click on "Select one curve" and click on the handle lower curve in the Rhinoceros window.

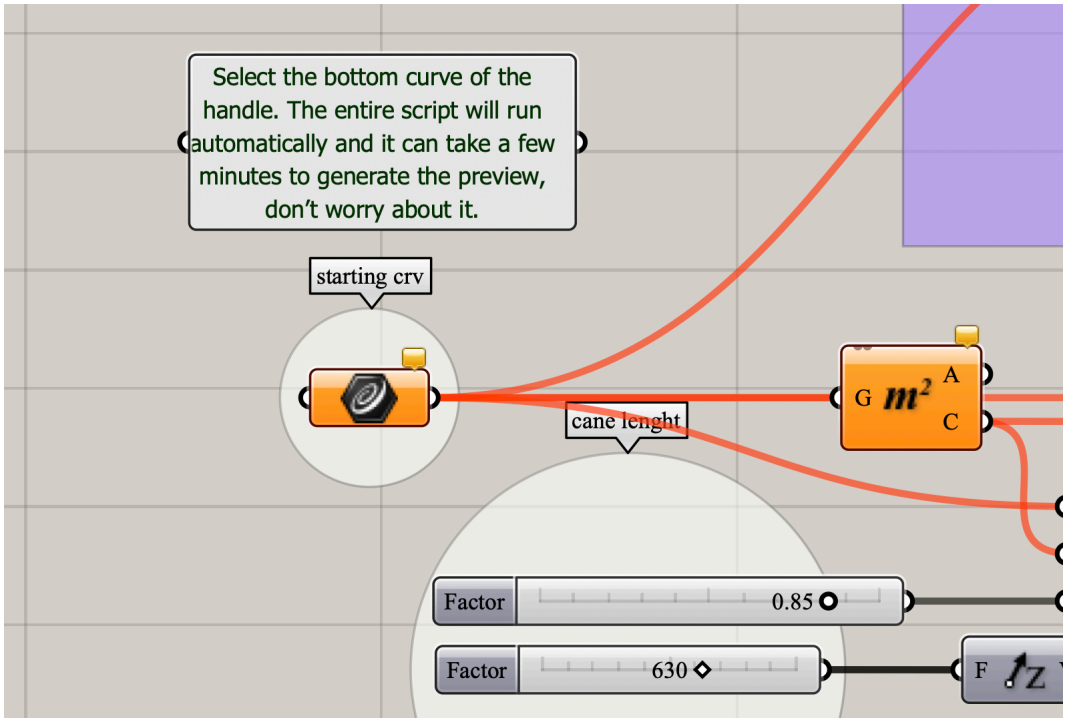

Fig. 3. The warning appearing when you first open the Grasshopper file.

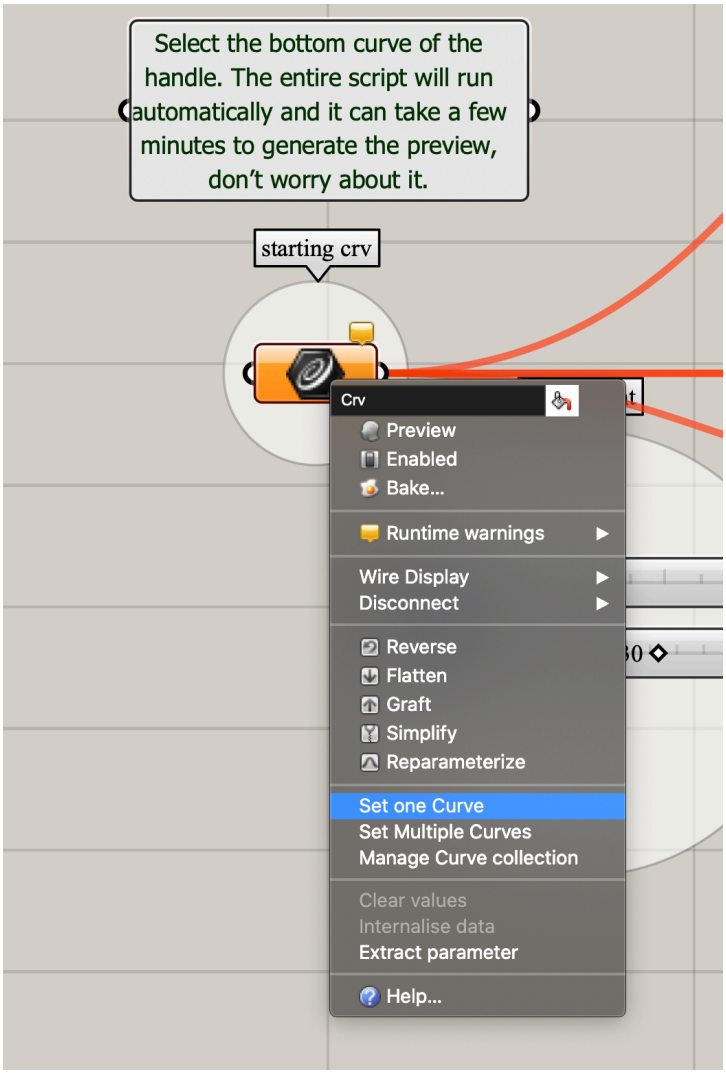

Fig. 4. How to resolve the previous warning signal.

Step04B. After this step the script is correctly linked and it will start immediately. Be patient because the complexity of the geometry could take several minutes in order to be created. When is successfully created, follow the instructions inside the Grasshopper script to "bake" the geometry.

Step05B. At this point export in Rhinoceros the geometries into .stl files, ready to be printed!

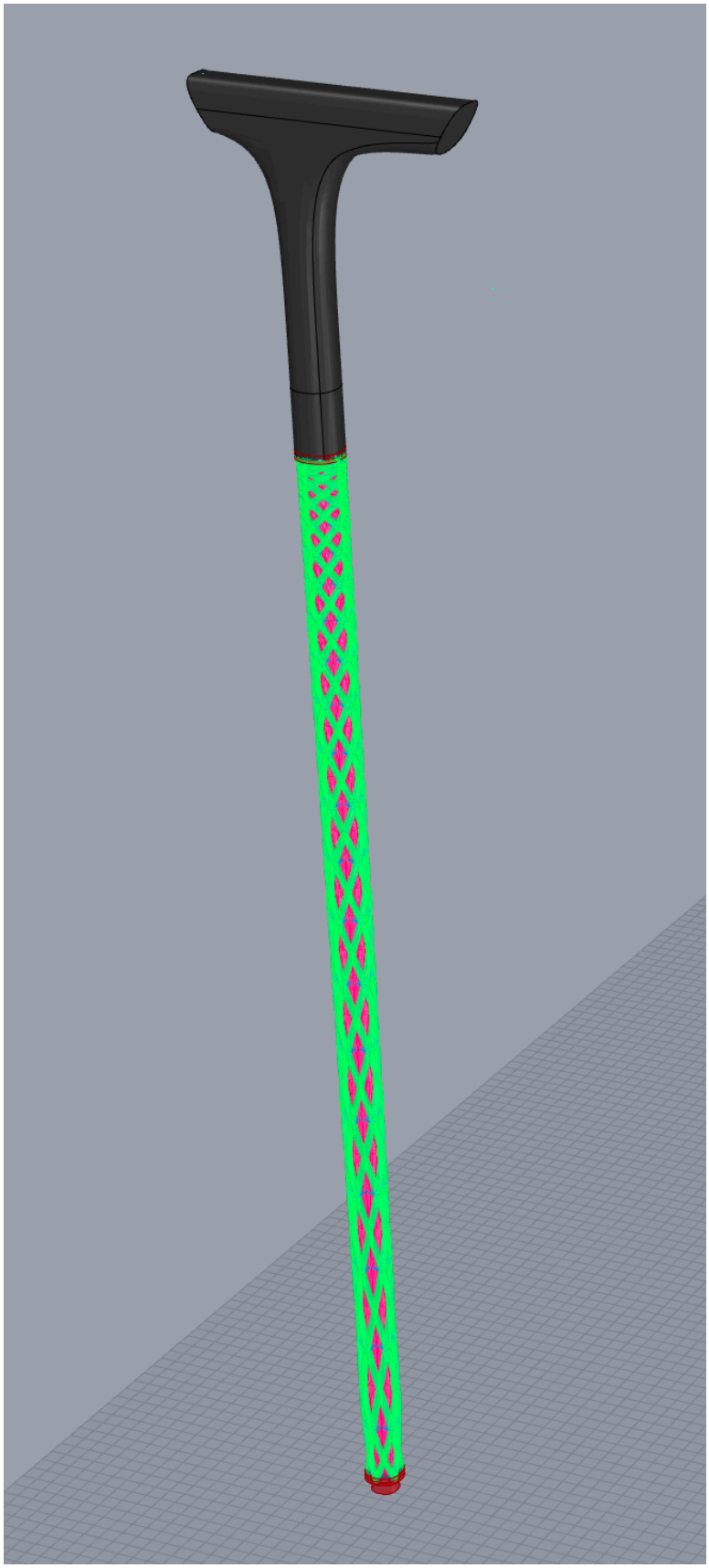

Fig. 5. Final visualization of TWISTR geometry created in Grasshopper.

3. Credits

TWISTR is a project publicly released and made available in open source mode according to the **Creative Common License (CC-BY)** and promoted by Distributed Design Market Platform with the related documentation.

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