GRUPPO 3

- Using the Beam Adapter plugin, model a CTR with three tubes using the parameters in the table. It is suggested to follow the structure of the examples included in the beam adapter plugin folder. (Follow the instruction in the documentation to install the plugin https://sofa-framework.github.io/doc/)

	TUBE 1	TUBE 2	TUBE 3
Straight length	110 mm	135 mm	170 mm
Curved length	30 mm	40 mm	55 mm
Tube radius	0.95 mm	0.85 mm	0.75 mm
Radius Curvature	100 mm	115 mm	140 mm

- Define a keyboard controller to command translation and rotation of each tube of the CTR (Use the python modules for the SOFA controller)
- Once the keyboard controller is tested, by exploring the mechanical object graph individuate the cartesian position of the tip and plot the 3D workspace by varying the insertion length and rotation of each tube. **Compare the plotted workspace when varying the length of the innermost and medium tube of 10 % of the nominal value**.
- Starting from the surface mesh assigned, create a volumetric mesh using the python script provided. Generate an elastic object from the volumetric mesh and add in the simulation scene (Use fixed boxes to constrain the object to a fixed position)
- Simulate the interaction of the CTR with stiffer (**50e6 Pa**) and soft (**2e3 Pa**) object and register the force values. **Modify the parameter of tube stiffness (medium tube radius and mass density) to reach a value of contact force of 0.3 N**

Liver mesh

GRUPPO 4

- Using the Beam Adapter plugin, model a CTR with three tubes using the parameters in the table. It is suggested to follow the structure of the examples included in the beam adapter