

# Script of unroll a shaft

```
import bpy
import bmesh
from mathutils import Vector
from math import copysign, pi

context = bpy.context

ob = context.object
me = ob.data

bm = bmesh.from_edit_mesh(me)
#bm.from_mesh(me)

v_r = bm.select_history.active
r = v_r.co.xy.length

assert(isinstance(v_r, bmesh.types.BMVert), "Select a Vert")
cut = bmesh.ops.bisect_plane(
    bm,
    geom=[f for f in bm.faces if all(v.co.y > 0 for v in f.verts)] + [e for e in bm.edges if all(v.co.y > 0 for v in
e.verts)] + [v for v in bm.verts if v.co > 0],
    plane_no=(1, 0, 0),
    )["geom_cut"]

for g in cut:
    g.select = True

bmesh.ops.split_edges(
    bm,
    edges=[e for e in cut if isinstance(e, bmesh.types.BMEdge)],
    verts=[v for v in cut if isinstance(v, bmesh.types.BMVert)],
    use_verts=True
)
```

```

# now "unfurl"

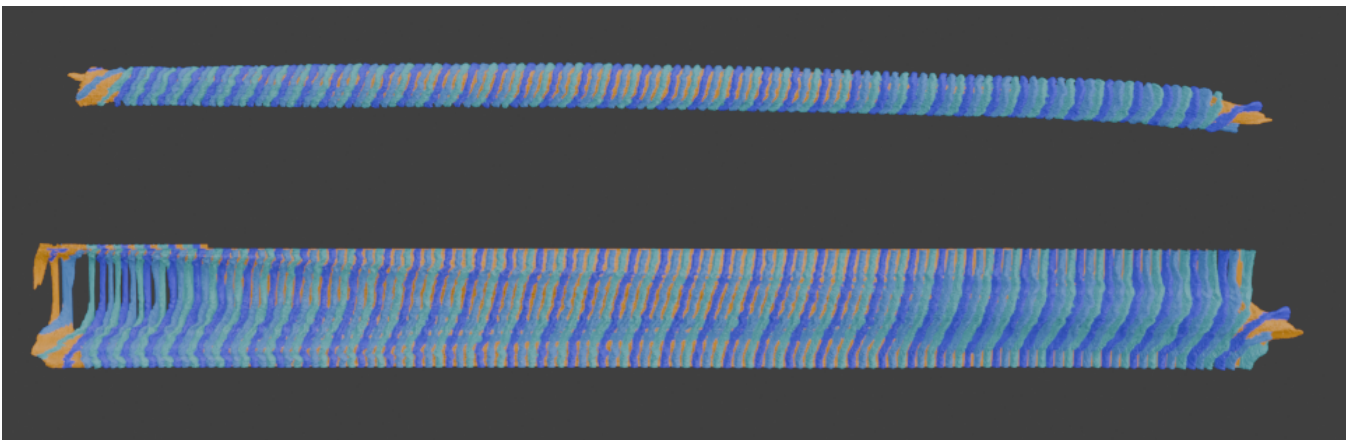
up = Vector((0, -1))
for v in bm.verts:
    co = v.co.copy()
    angle = -up.angle_signed(v.co.xy)
    if 1 + up.dot(v.co.xy.normalized()) < 1e-4:
        # meridian
        fv = sum((f.calc_center_median().x
                  for f in v.link_faces)
                 ) / len(v.link_faces)
        v.select_set(True)
        angle = copysign(angle, fv)
    v.co.z = co.z
    v.co.y = -co.xy.length + r
    v.co.x = angle * r

bmesh.update_edit_mesh(me)

```

Some steps about how to run this script:

1. Copy the script to the Blender text editor.
2. During the Object mode, set the object origin to the center of mess.
3. Go to edit mode, select a vertex that should be the outer surface of the shaft. This vertex coordinate on the xy plane projection will be a regular radius for the unroll model.
4. Run the script.
5. You will get the unrolled shaft.



Revision #2

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