1. Level Sets

Part A.

- Estimate the differential coordinates of the mesh
- Perform Taubin smoothing (shrinking)
- Perform smart “Taubin inflation”

Part B.

- Generate the signed distance field of the mesh surface as a discrete structure.
- Generate the vector force/normal field only for negative DF samples
- Perform collision detection of a sphere, axis aligned box and simple 3D mesh with the object
    a. Using only the meshes
    b. Using the distance field
    c. Compare performance
- For the case of the distance and force field, estimate the direction and “magnitude index” of the collision response force. Visualize the output.
- Follow the “siren” neural approach to extract the sdf (signed distance function) described in “https://www.computationalimaging.org/publications/siren/”.