

15-294 Rapid Prototyping Technologies:

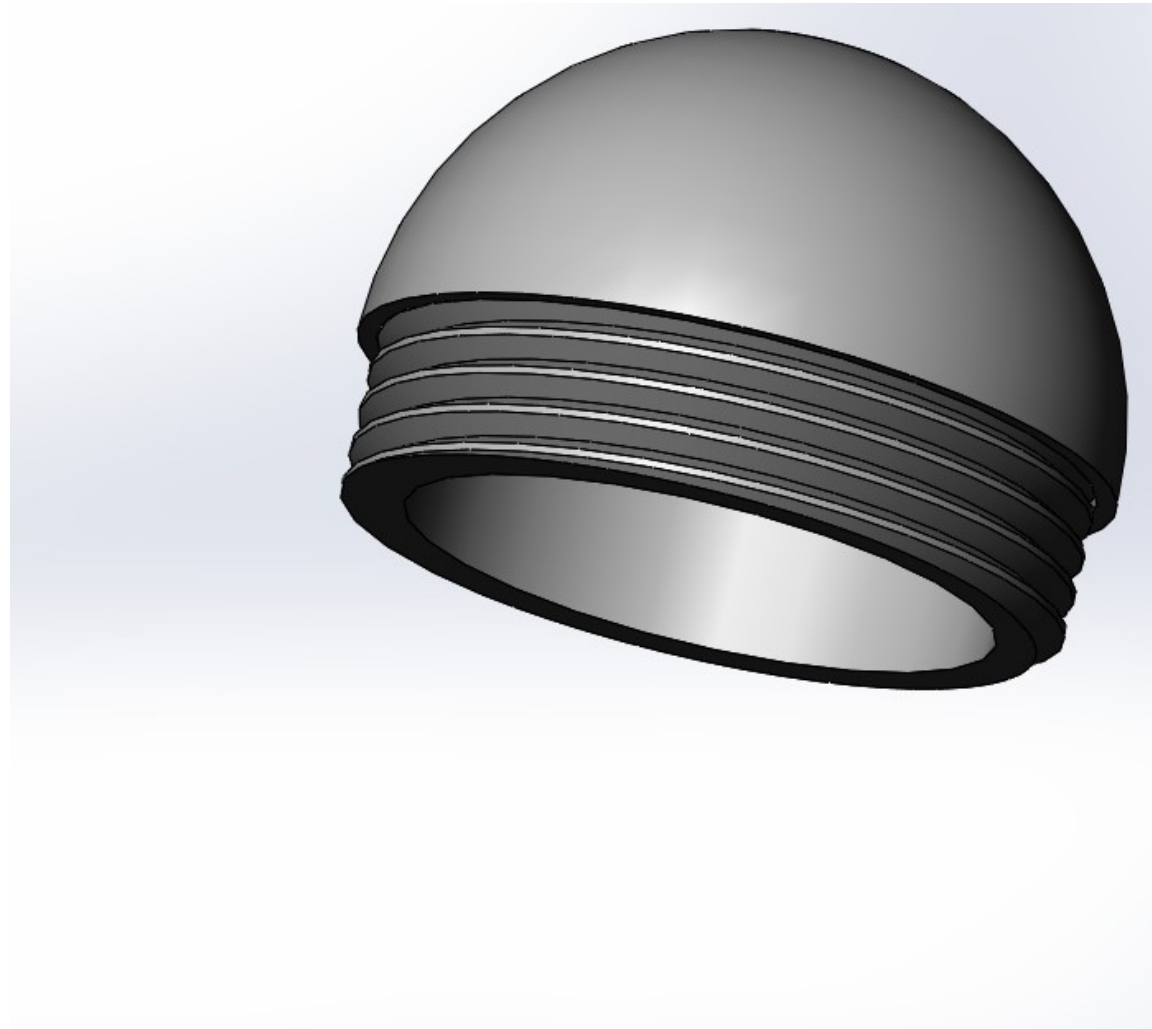
STL Files

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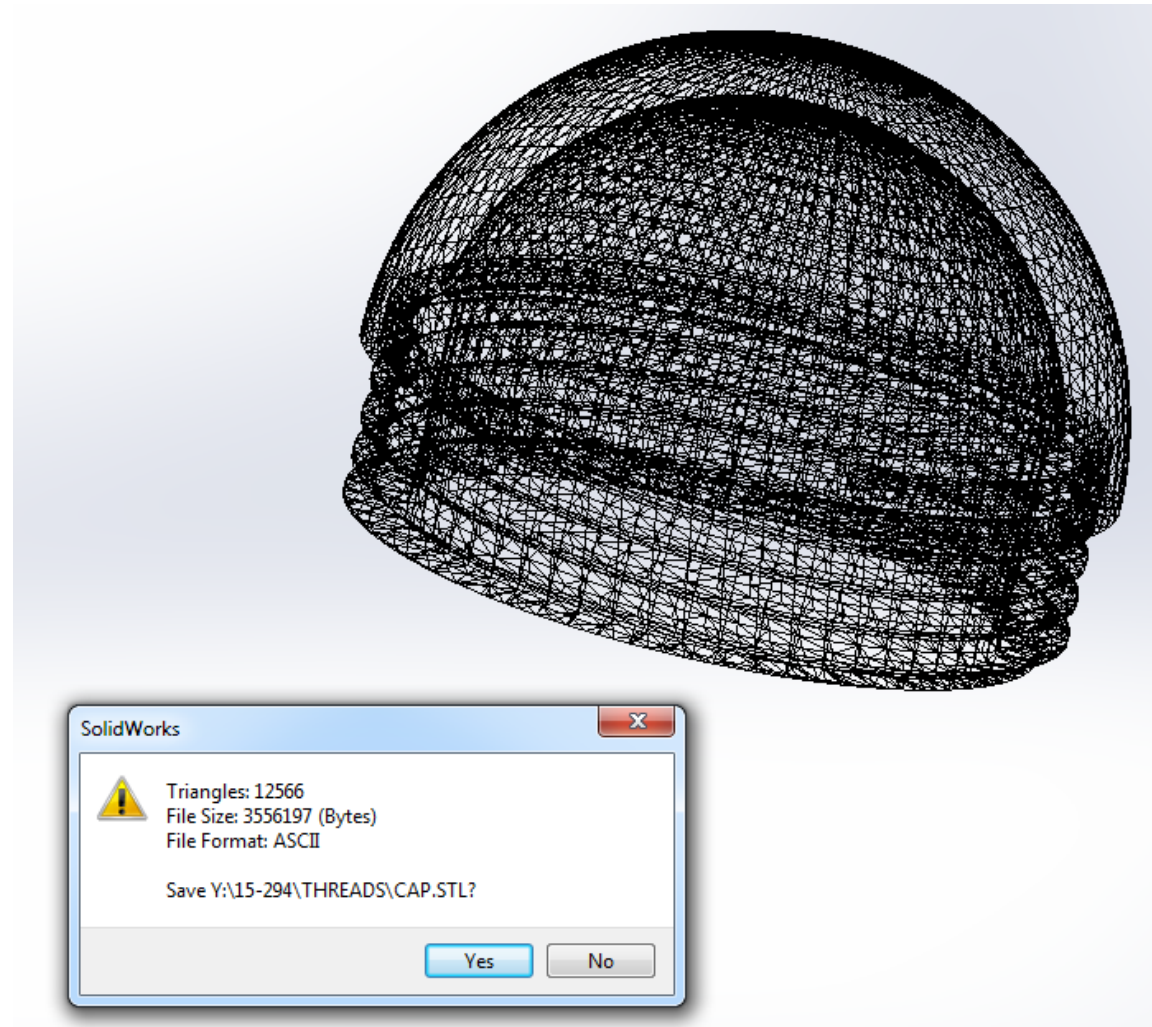
The STL File Format

- StereoLithography file
 - *or* –
- Standard Tessellation Language
- Originally developed by 3D Systems.
- Now widely used for describing 3D surfaces for CAD or printing.
- Two flavors: ASCII or Binary.

Object With Complex Surfaces



Triangular Tesselation



ASCII STL File

```
solid <name>
facet normal ni nj nk
  outer loop
    vertex v1x v1y v1z
    vertex v2x v2y v2z
    vertex v3x v3y v3z
  endloop
endfacet
...
endsolid <name>
```

Binary STL File

UINT8[80] – Header (must not begin with “solid”)

UINT32 – Number of triangles

foreach triangle

REAL32[3] – Normal vector

REAL32[3] – Vertex 1

REAL32[3] – Vertex 2

REAL32[3] – Vertex 3

UINT16 – Attribute byte count

What Does the Slicer Do?

- Shell the object.
- Add infill (internal lattice for strength).
- Add supports and raft if requested.
- Slice the object into layers.
- For each layer, compute a “tool path” for the extruder to follow.