

Background

- Dr. Marc Olano, Computer Science and Electrical Engineering, UMBC
- Current photogrammetric scanning rig stands in UMBC's Imaging Research Center
- Replace existing top of a scanning rig with a dome-shaped structure
- Alleviate issues with scanning larger objects, and unfocused pictures by increasing the distance between the cameras and the object being scanned

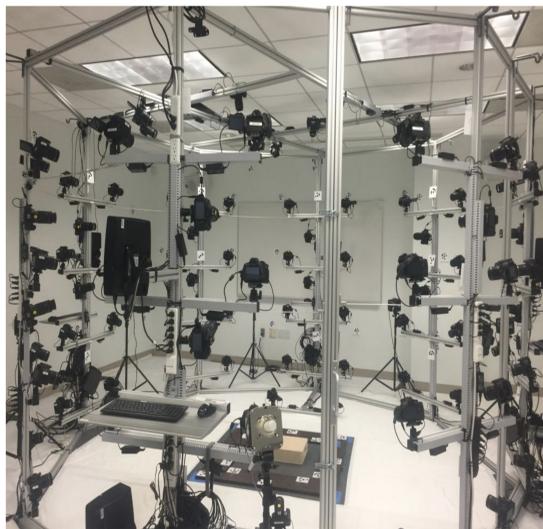


Figure 1. Existing Rig

System Requirements

- Must hold 4 Cameras
- Must not hinder movement of the rig door
- Must be able to house power cables and wires
- Should be a permanent structure
- Will avoid all obstacles above ceiling and ceiling itself
- Should reach highest point above ceiling
- Must support at least 20 lbs. of cameras/accessories
- 12 ft. diameter rig with 5 feet of clearance above the current structure

Concept Design

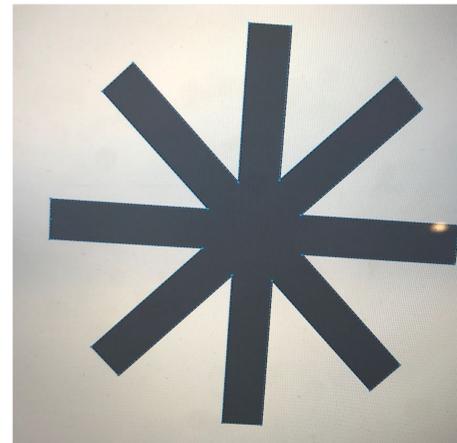


Figure 2a. Prototype #1 - Leg Junction

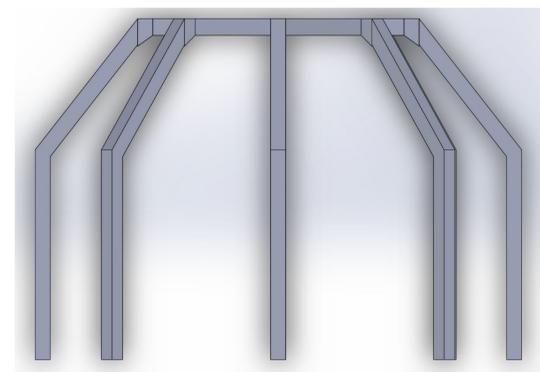


Figure 2b. Prototype #2 - Rig Framing



Figure 3a. Proposed Dome Shape



Figure 3b. Final Design with Brackets and Braces

Testing

FEA Testing conducted on (4a) leg of upper dome, (4b) lower horizontal ring, and (4c) upper horizontal ring

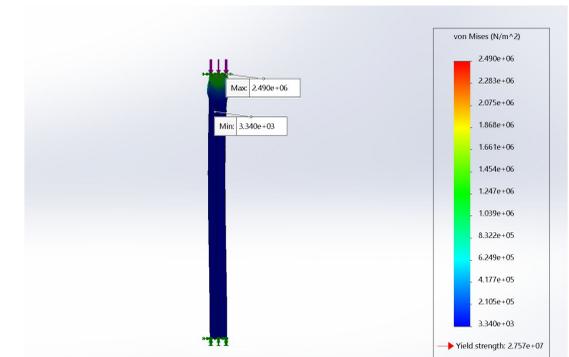


Figure 4a

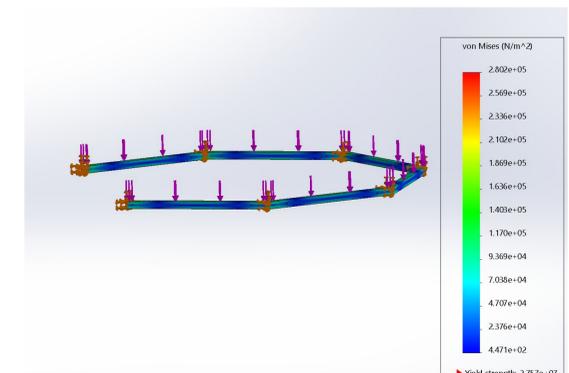


Figure 4b

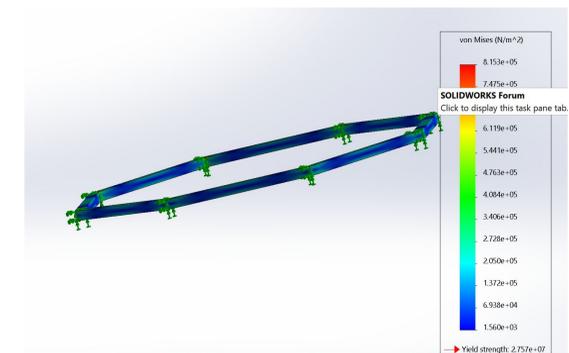


Figure 4c