

HAMMER CHALLENGE

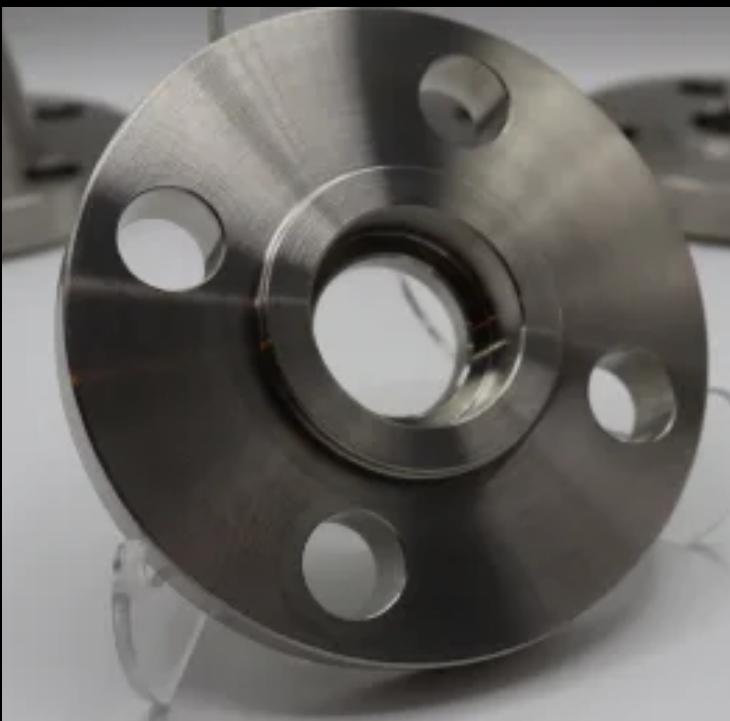


TEAM MEMBERS

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GOALS

- Model forged metal components using wooden tools then create instructions for recreation.
- Capture the model part and other shapes using 3D photogrammetry
- Calculate the strain of the component to understand the material's reactions under forces.



PROCESS



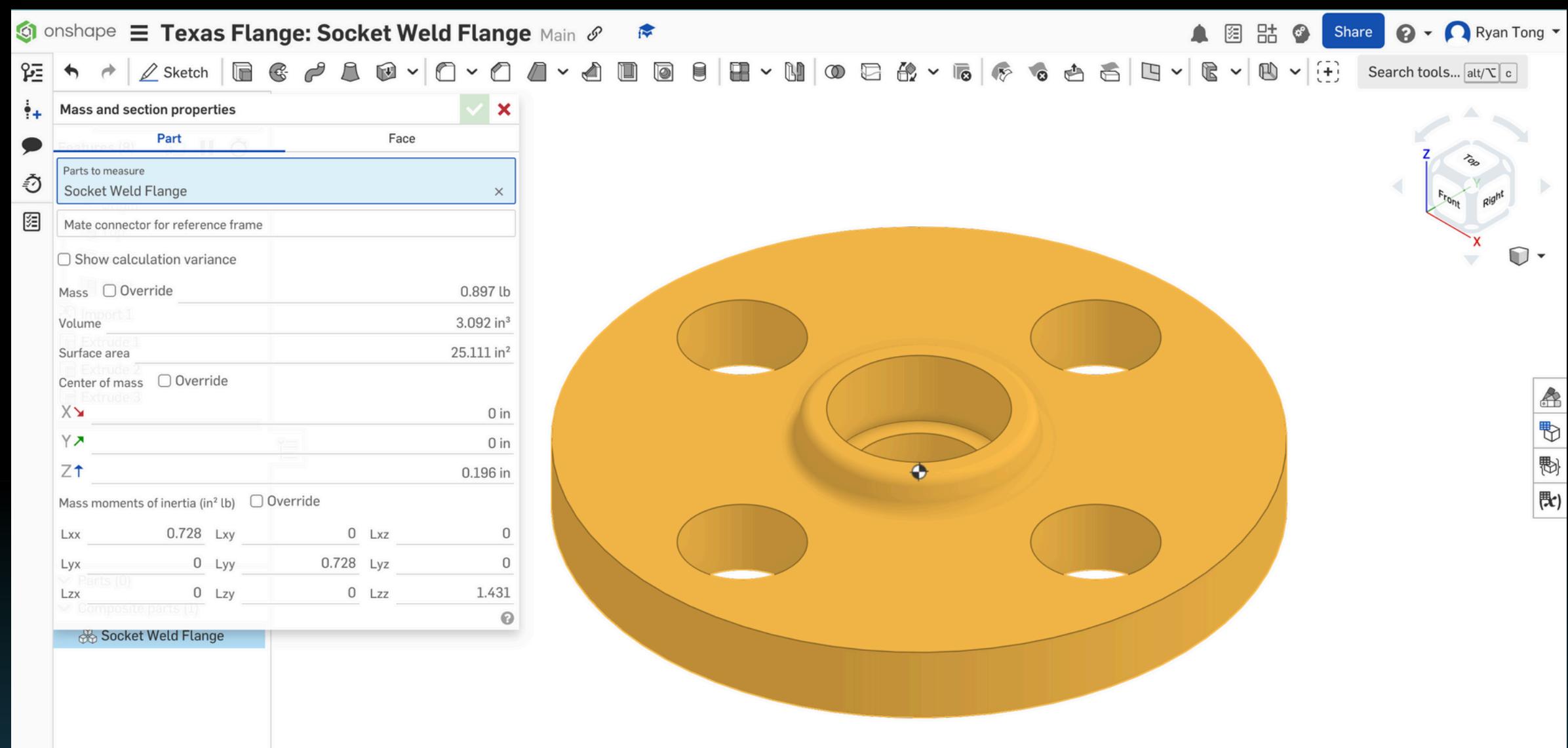
3D PHOTGRAMMETRY



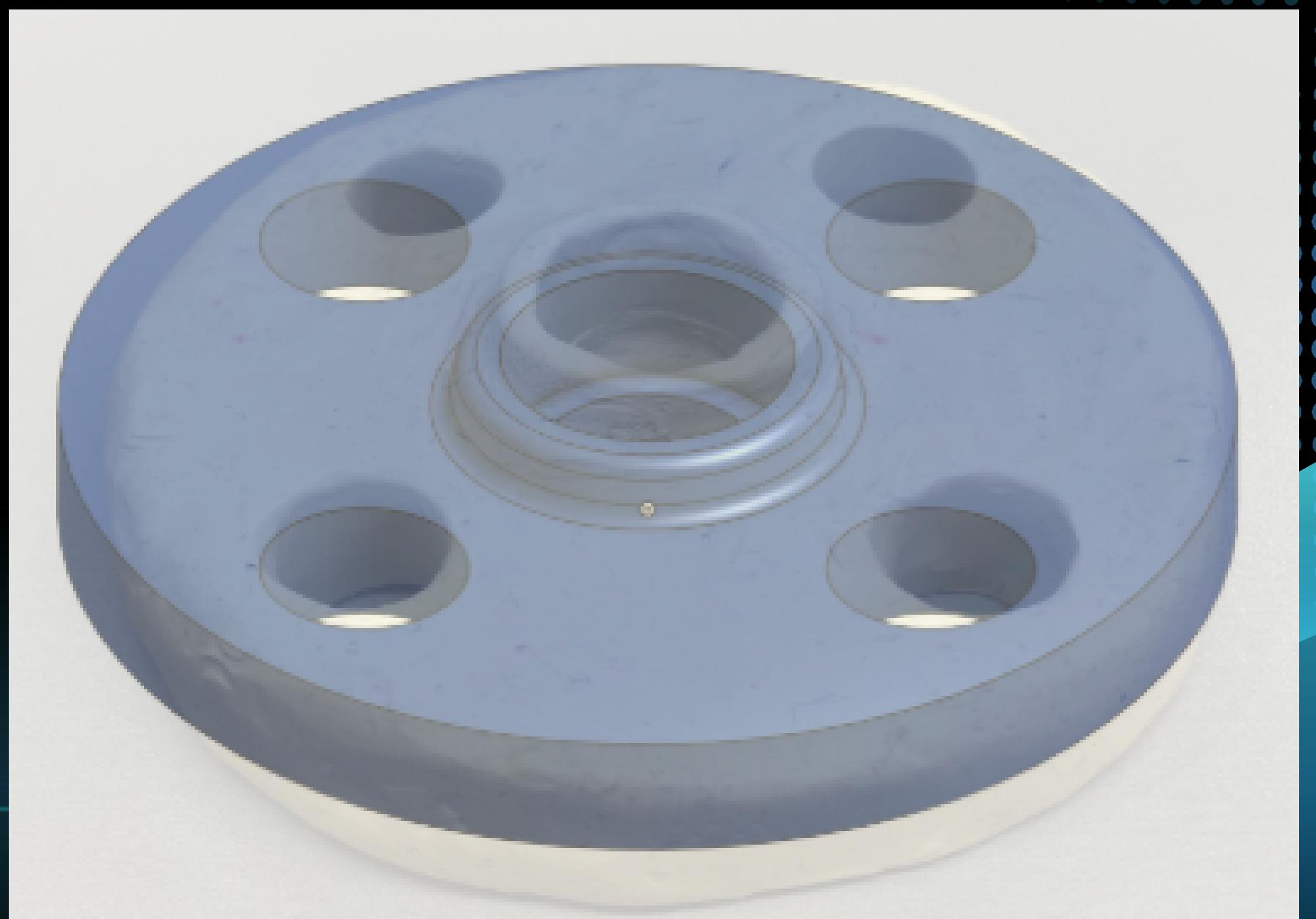
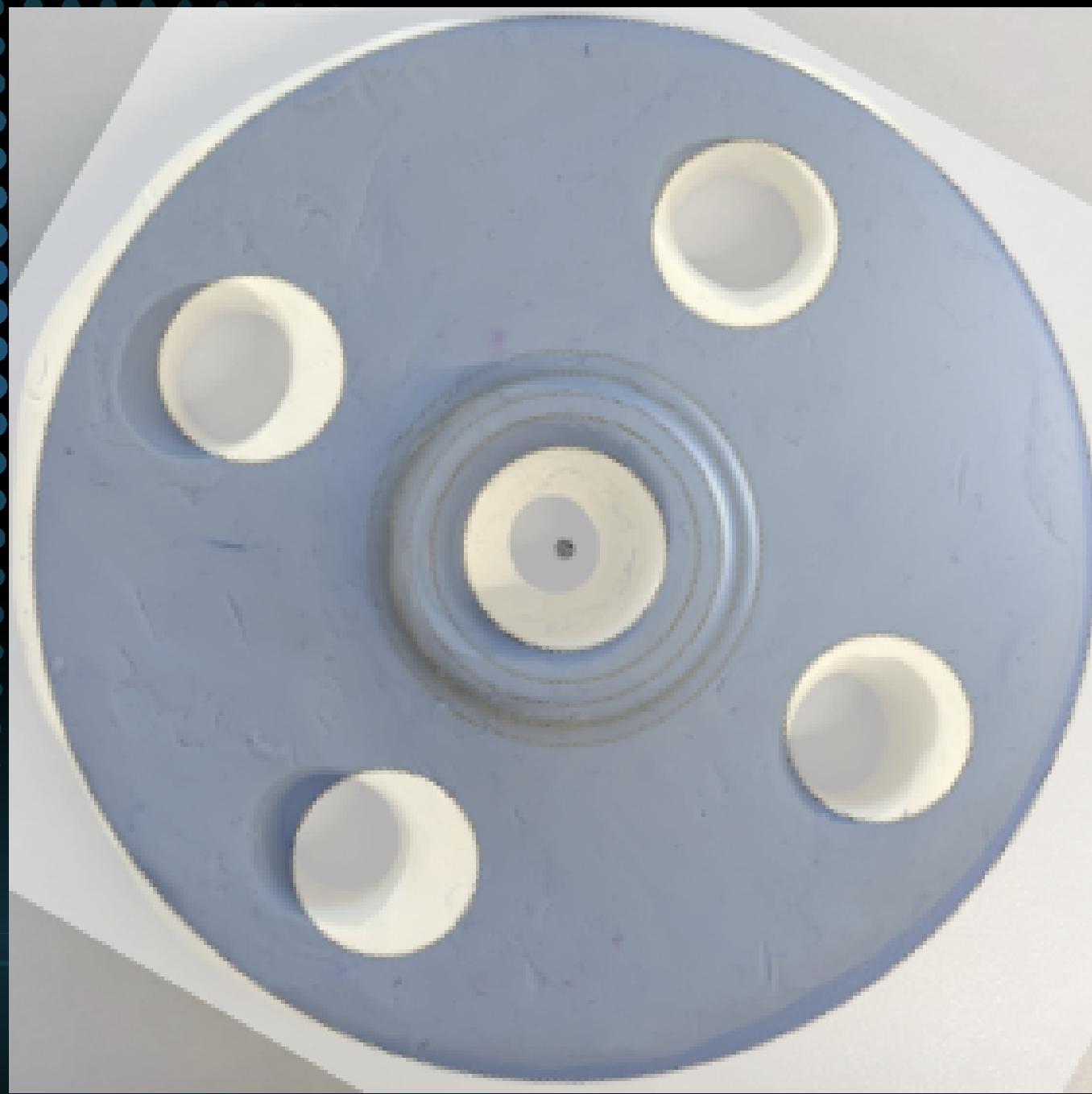
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CAD



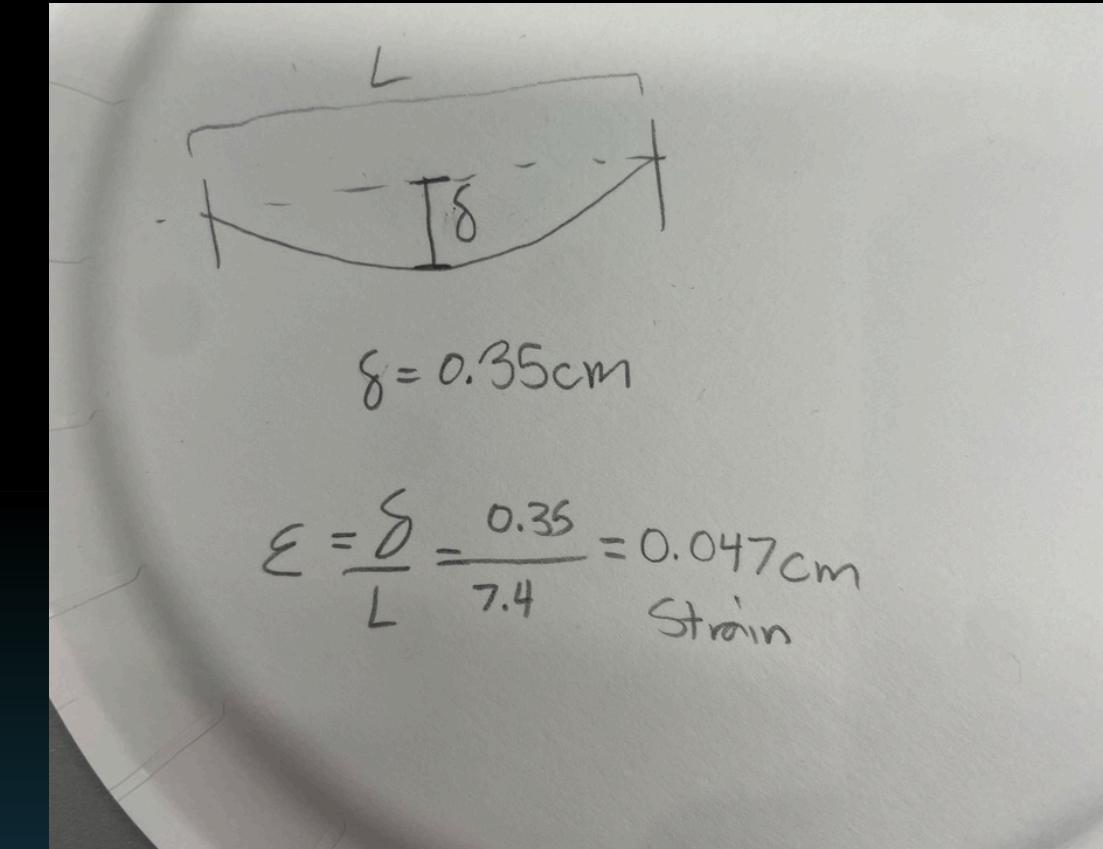
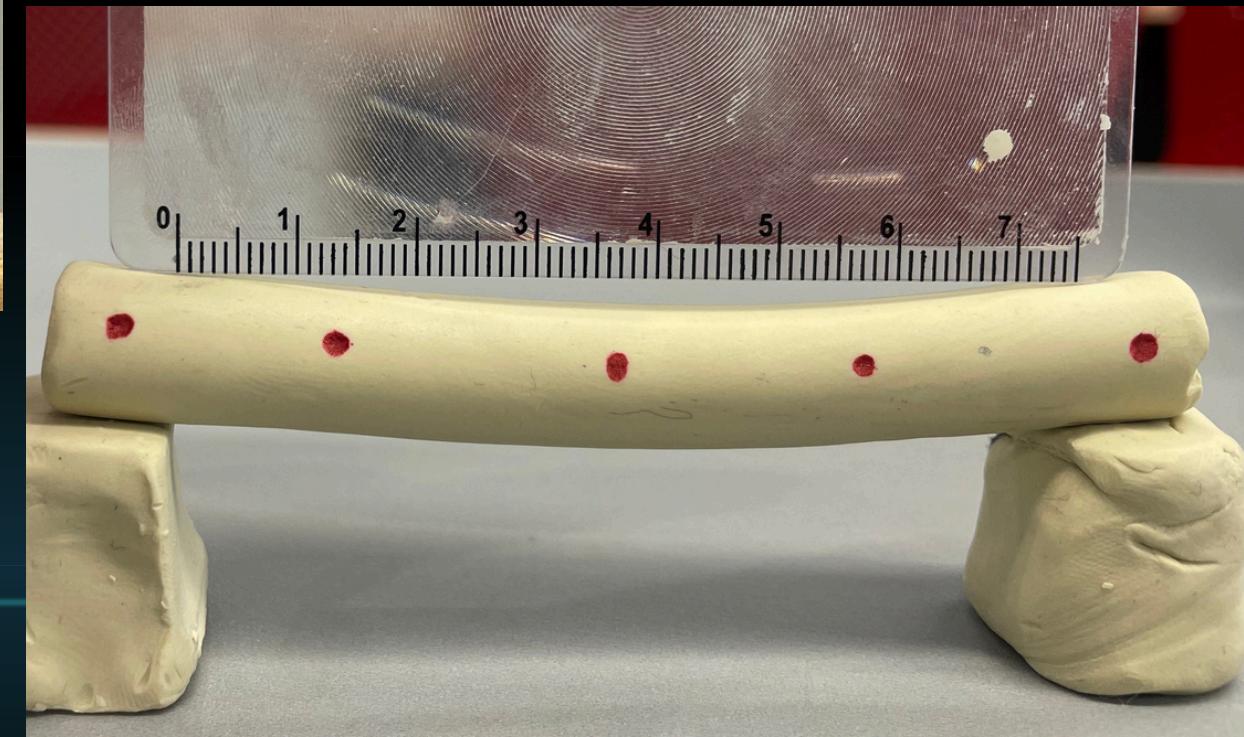
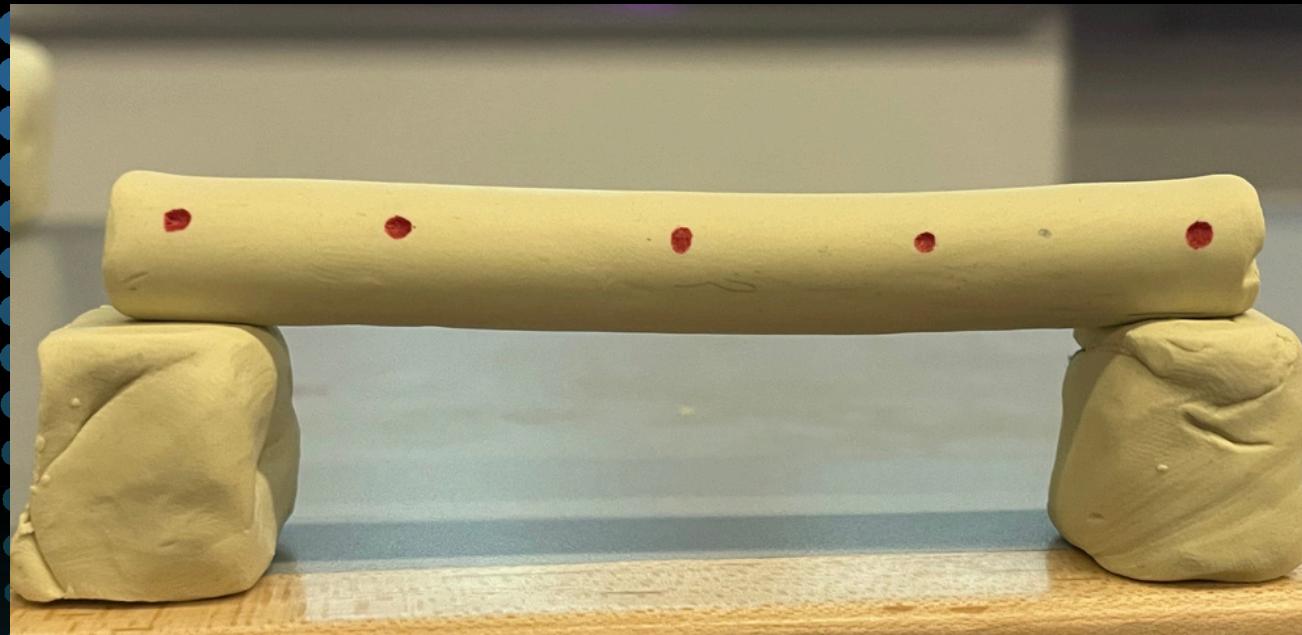
OVERLAP



STRAIN

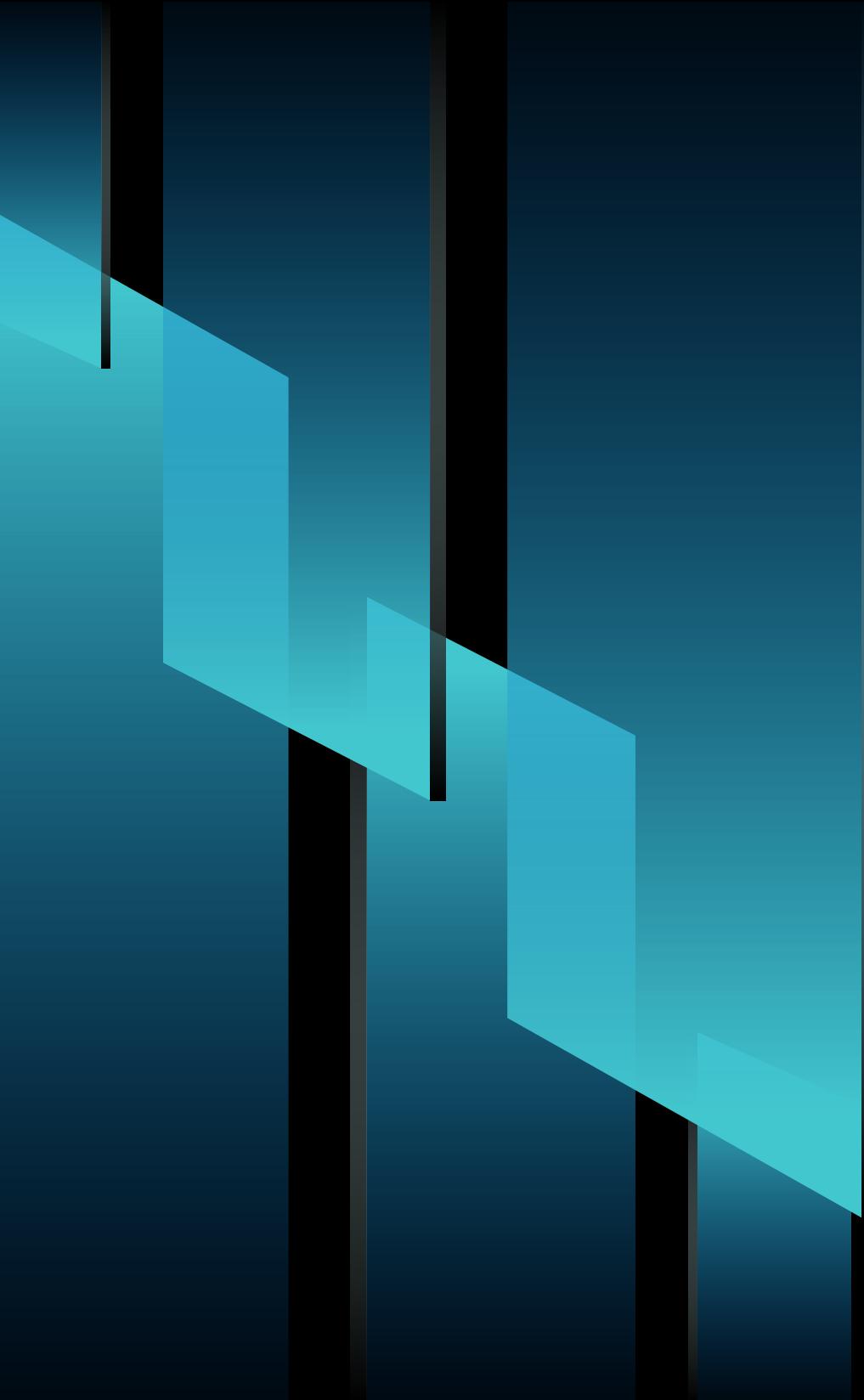
Strain can be calculated by displacement/deformation in the x-direction divided by the length.

We found the strain of a 7.4 cm piece plasticine under the force of gravity to be 0.047cm.



CONCLUSIONS

- Documenting creation steps to feed machine learning that teaches AI to develop forging steps based on CAD models.
- Utilize 3D photogrammetry to measure geometries and model parts to guide the forging tool paths.
- Understand how forces affect the strain of heated metal to predict how they will deform during the creation of forged metal parts.



THANK YOU

