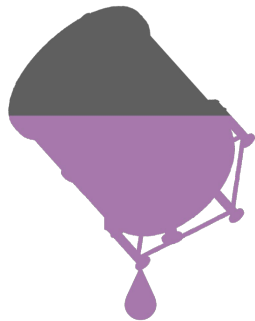




UNIVERSITY of
ROCHESTER



LArDRIP

LArTPC Dead Region Inference Project

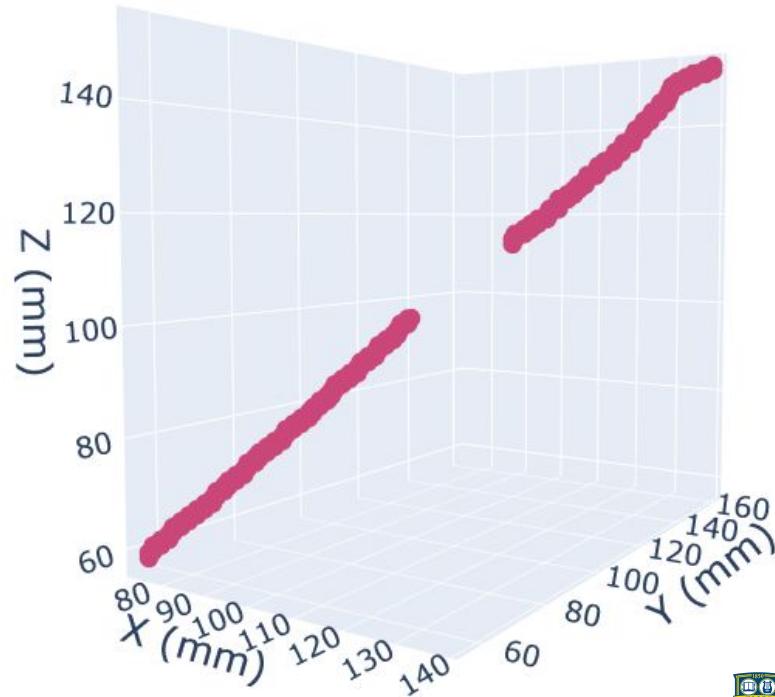
Update

Hilary Utaegbulam
University of Rochester



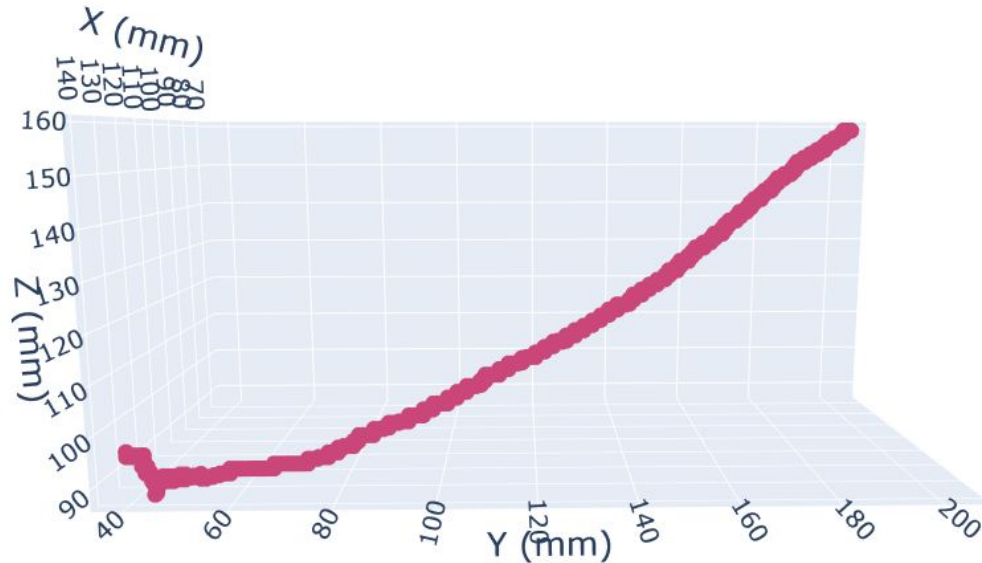
Problem Statement

- Can we train a deep learning model to infer missing regions of charged particle tracks, given XYZ information?



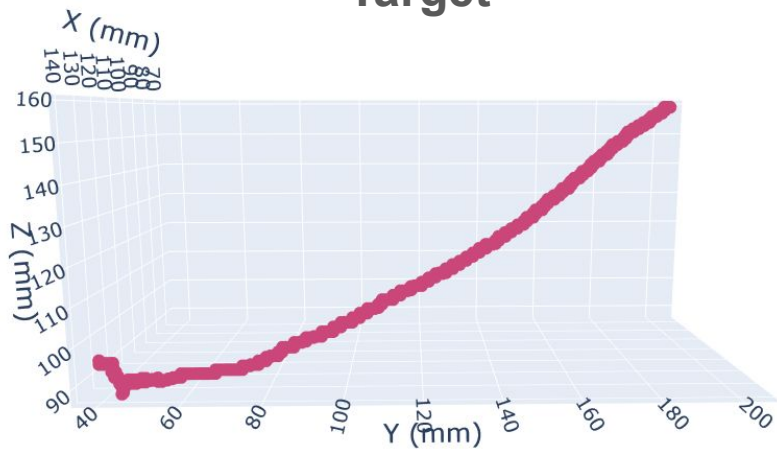
Method

- Voxelized tracks!
- Remove voxels between consistent x coordinates
 - Will remove different regions (input generator) in the near future!!
- Use a Sparse CNN to generate new voxel coordinates
 - Eventually predict what the non-zero voxel energies should be



Results

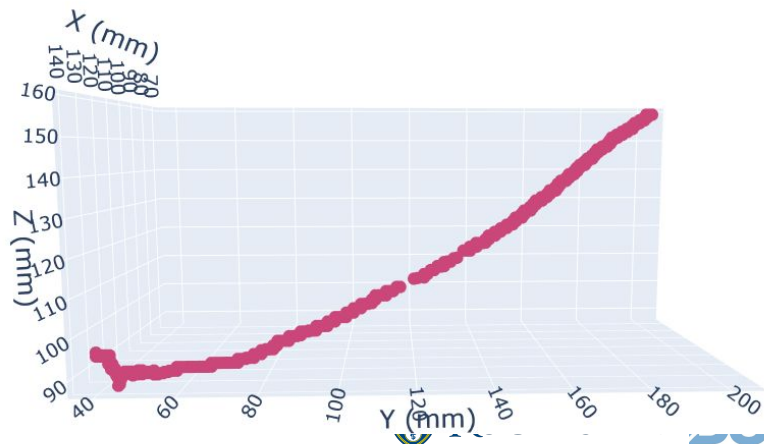
Target



Input

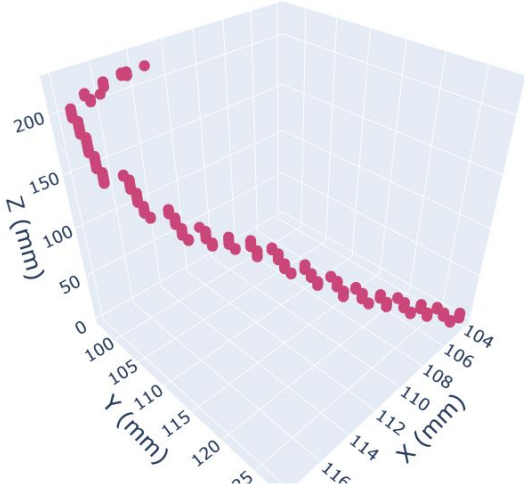


Prediction

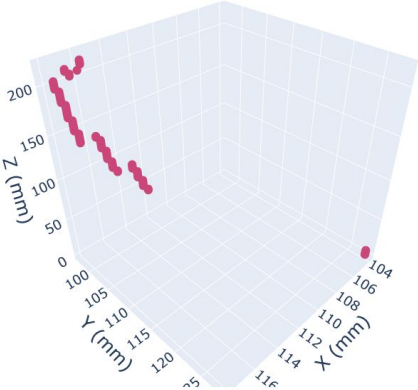


Results

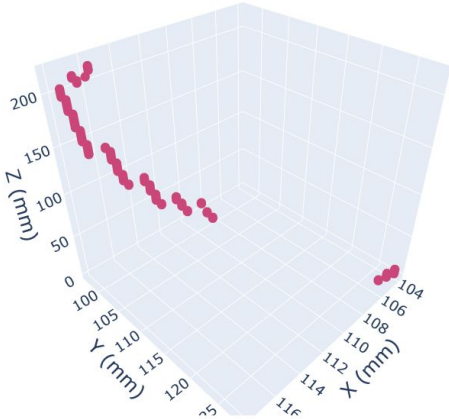
Target



Input

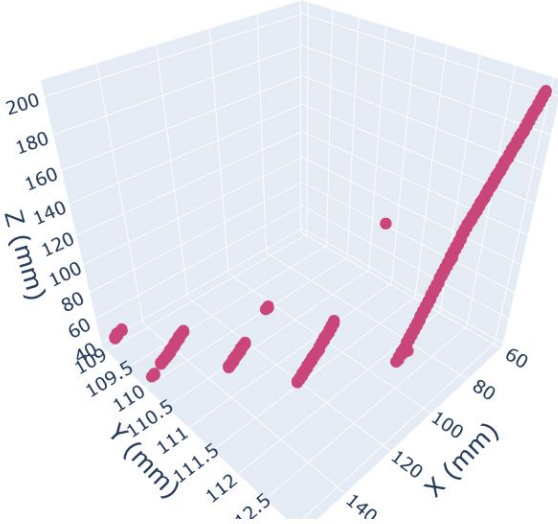


Prediction

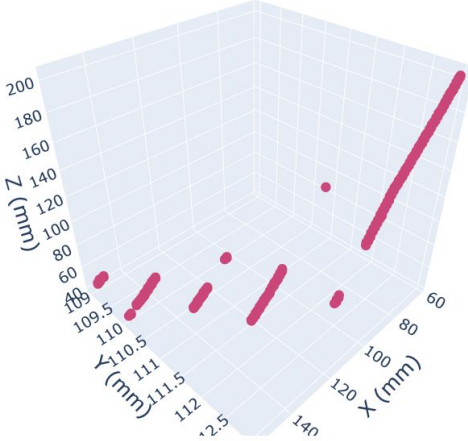


Results

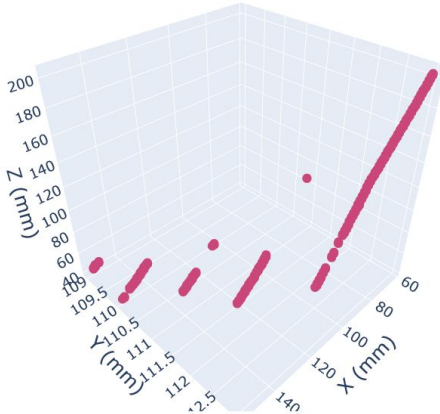
Target



Input

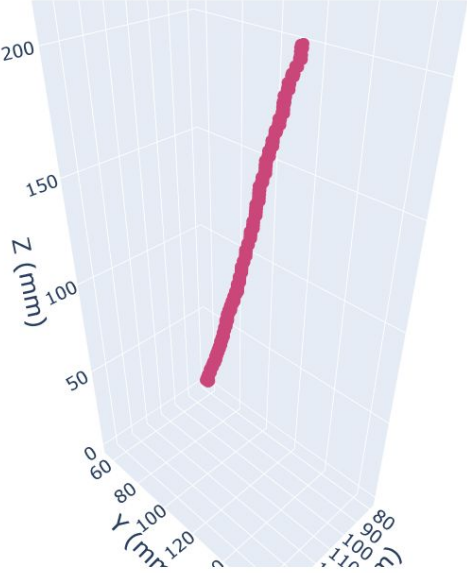


Prediction

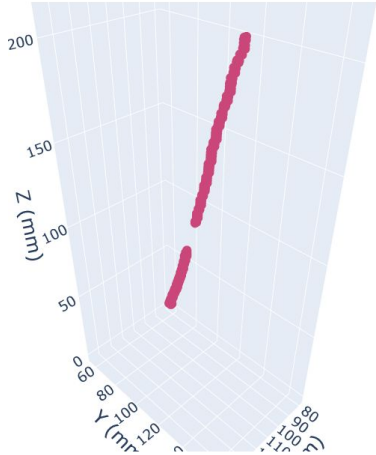


Results

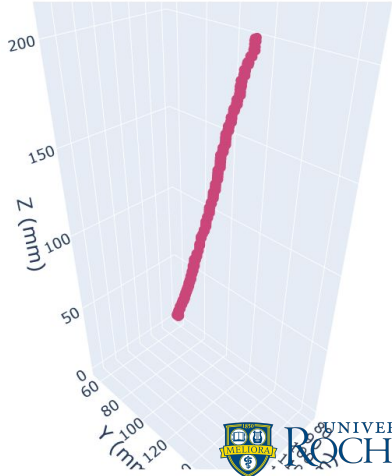
Target



Input

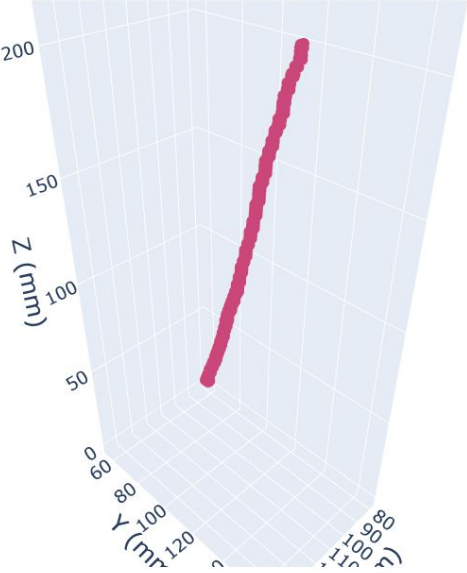


Prediction

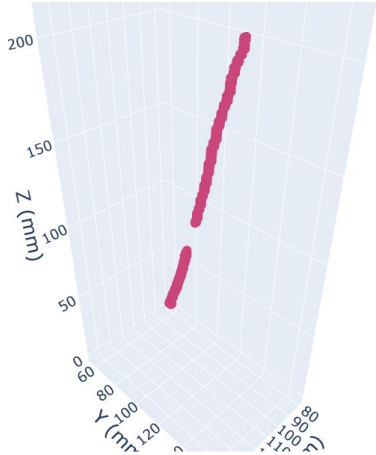


Results

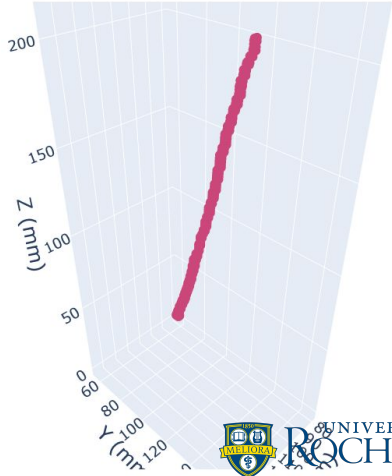
Target



Input

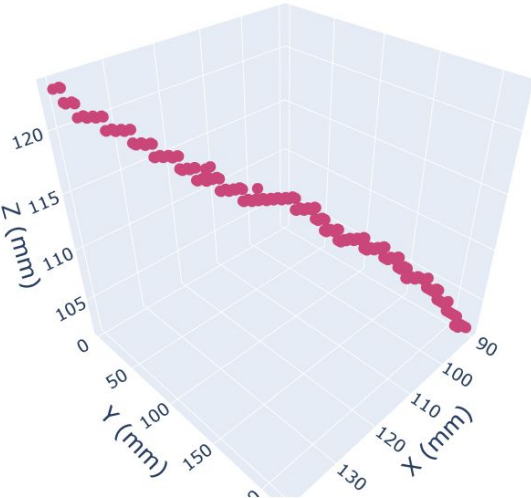


Prediction

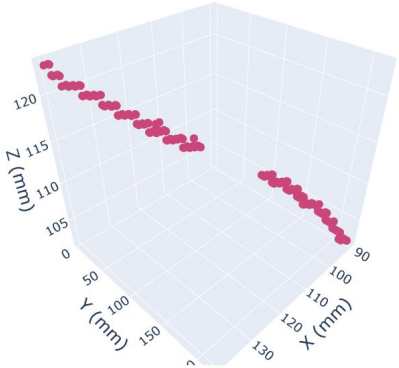


Results

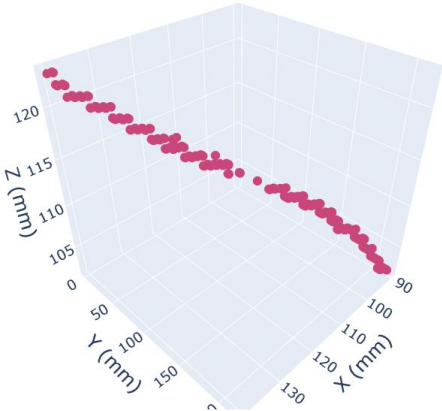
Target



Input

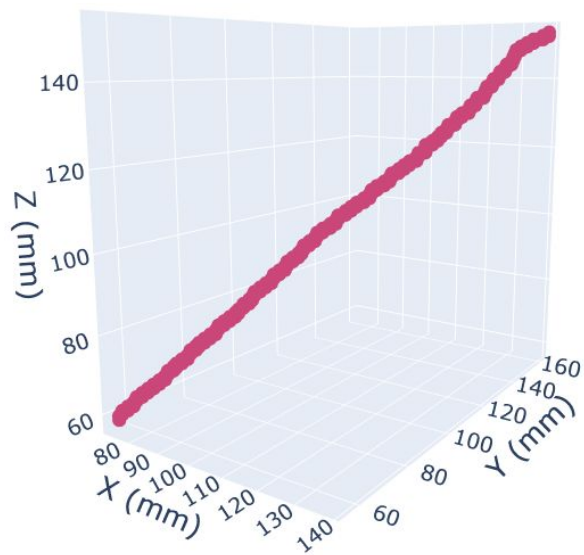


Prediction

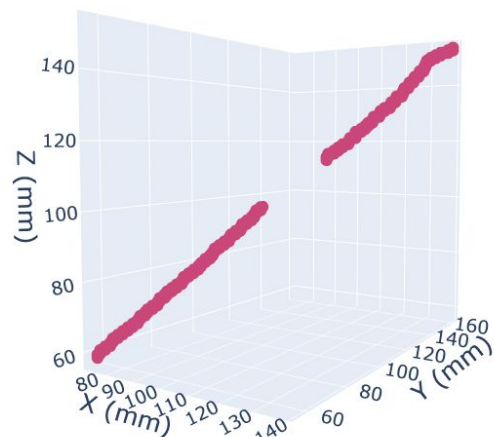


Results

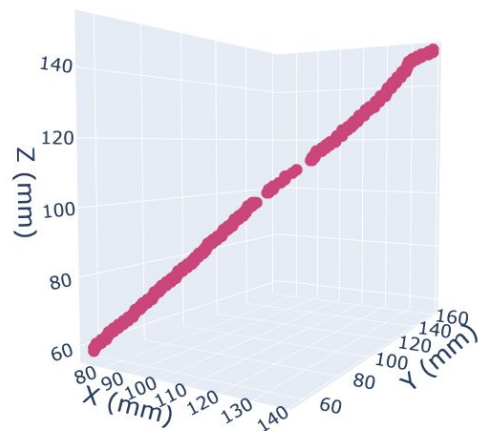
Target



Input

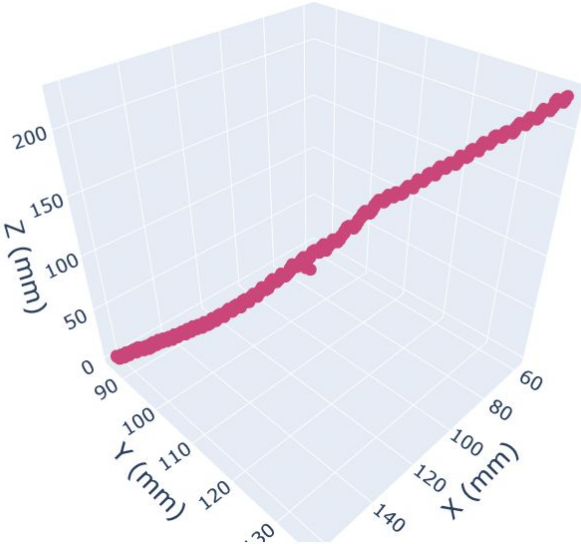


Prediction

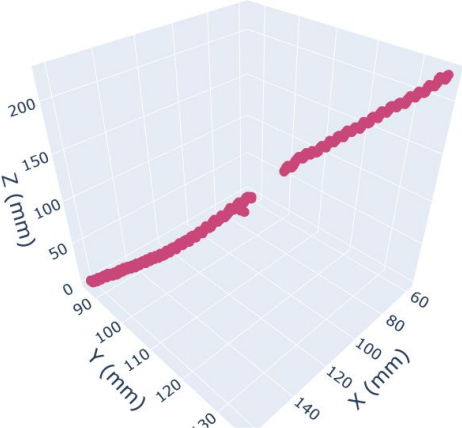


Results

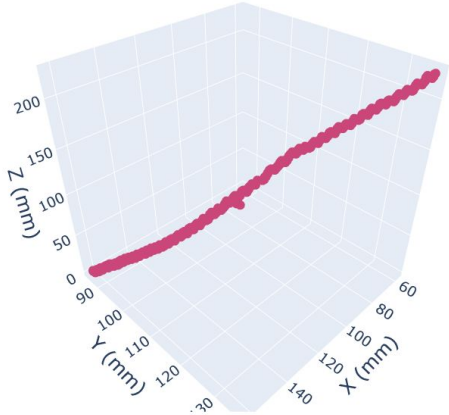
Target



Input

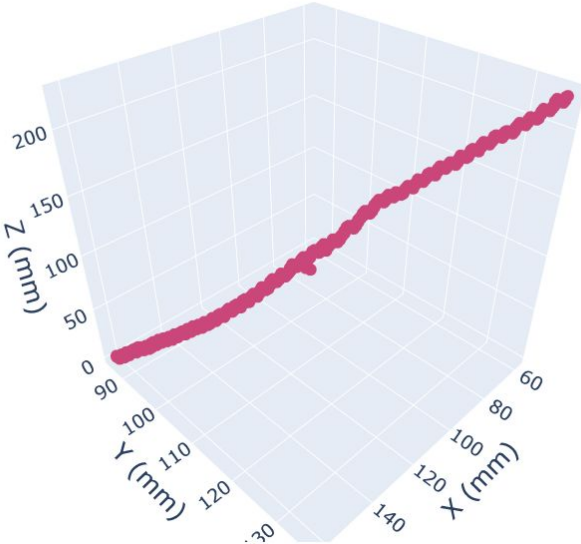


Prediction

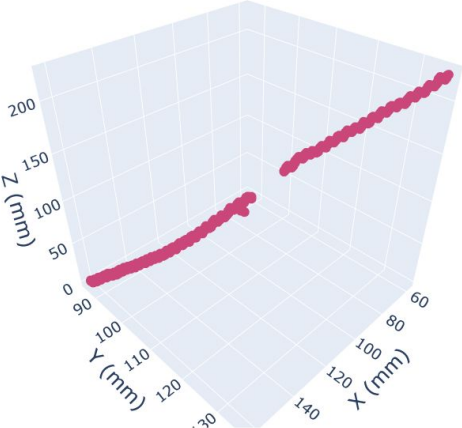


Results

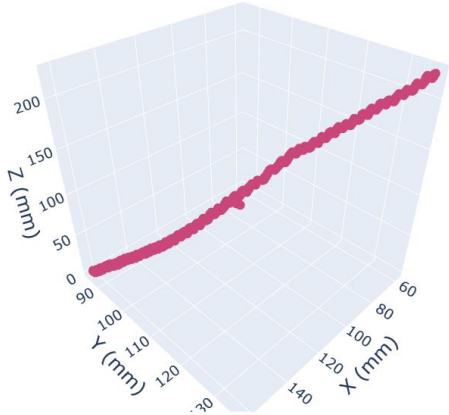
Target



Input

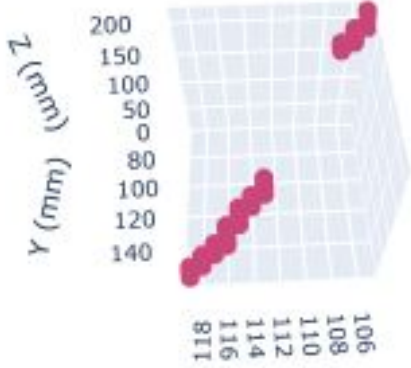


Prediction

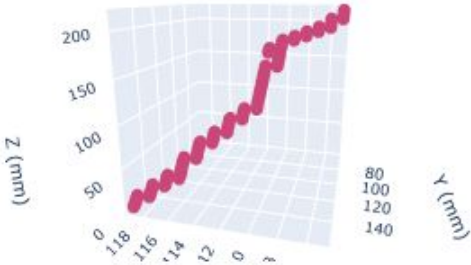


Results

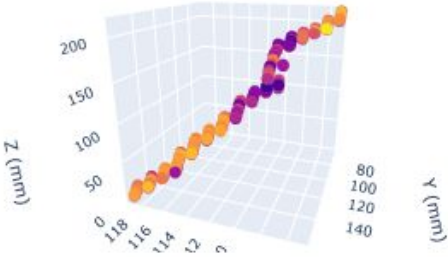
Input



Target

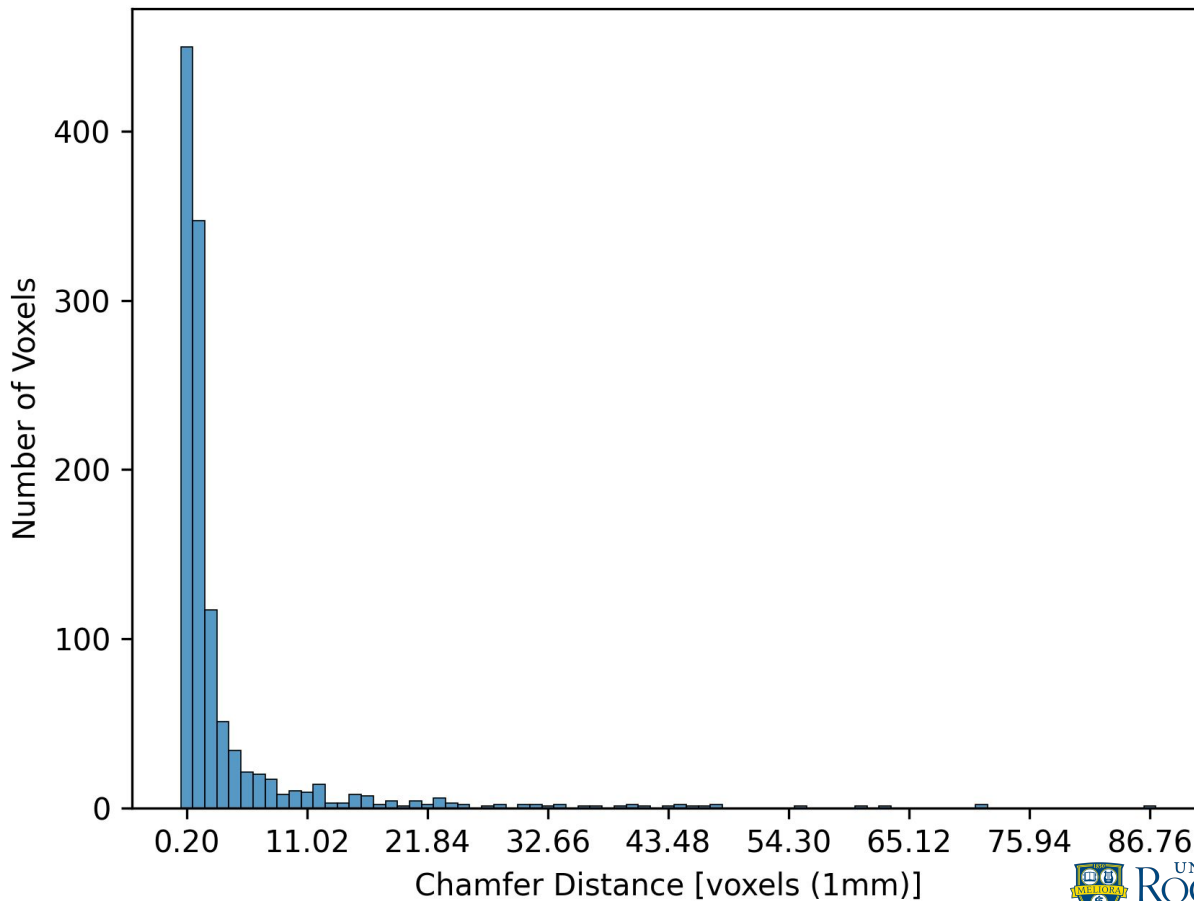


Prediction



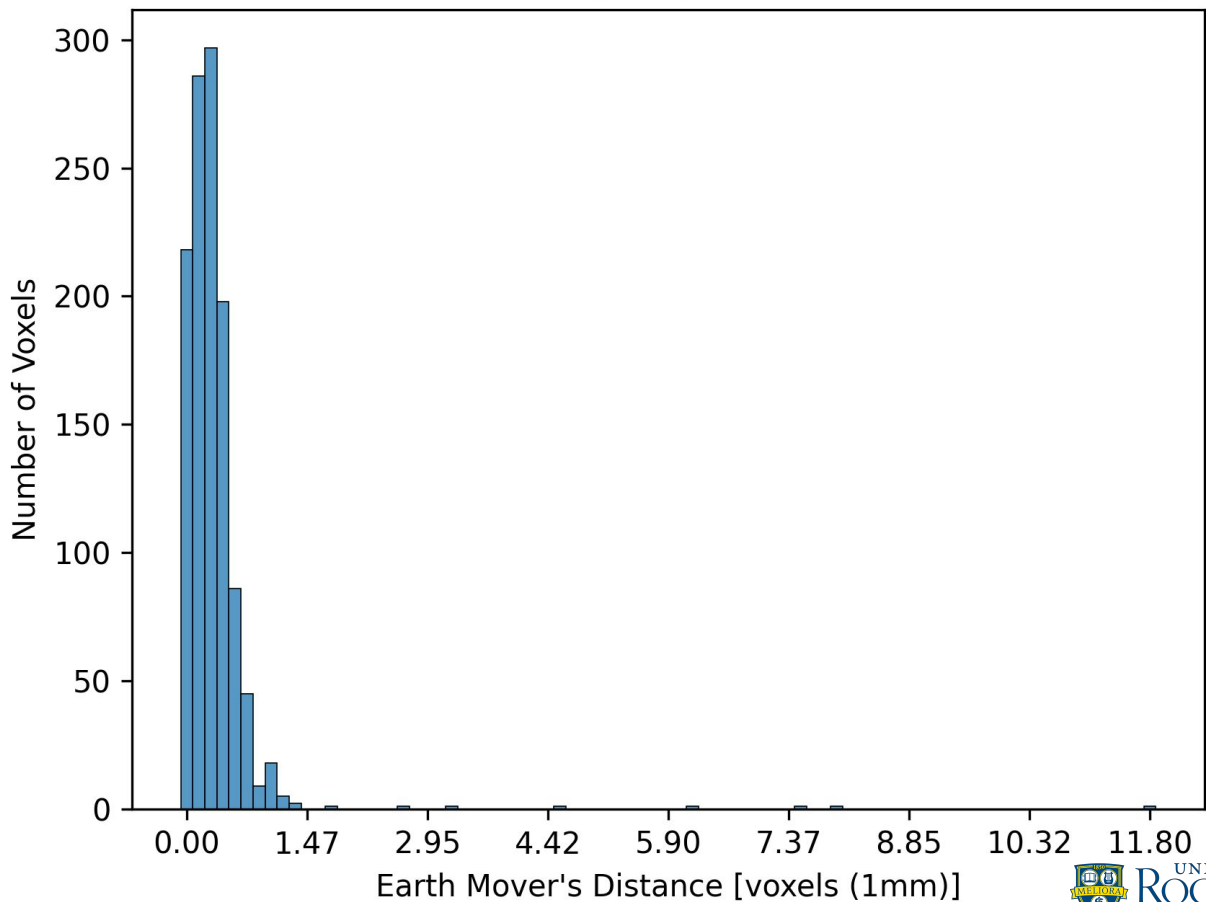
Chamfer Distance

Chamfer Distance on Missing Region per Prediction and Target Tracks



EMD Distance

Earth Movers Distance on Missing Region per Prediction and Target Tracks



Percent Distance—Voxel Count

