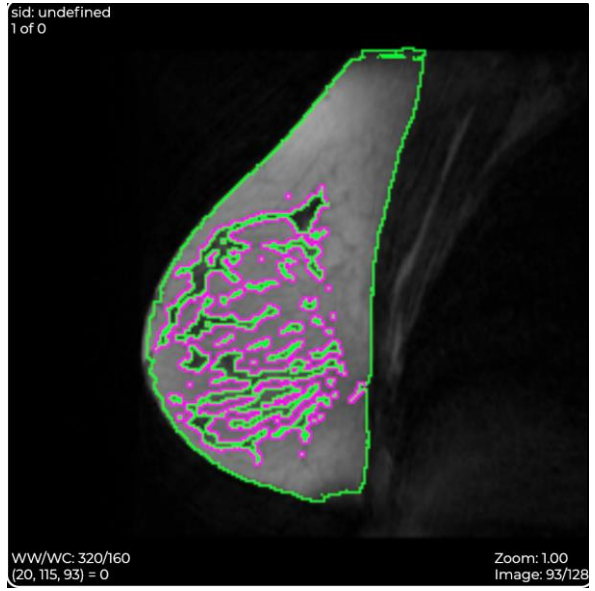
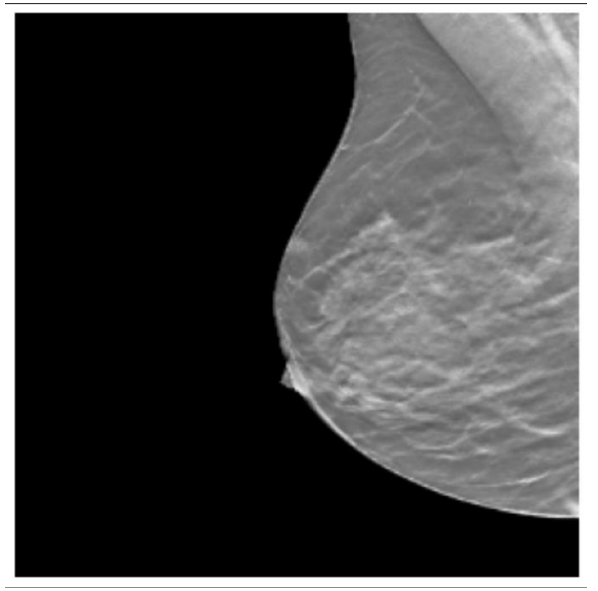
Breast Density

SUPERVISED APPROACH TO LEARNING PERCENTAGE OF FGT DENSITY IN BREAST BASED ON MAMMOGRAMS.

FGT Segmentation → Breast Density



FGT segmentation tool to predict density



Ground truth = 0.3847

Architectures

Simple Linear Regression

- Depth/Size

DenseNet

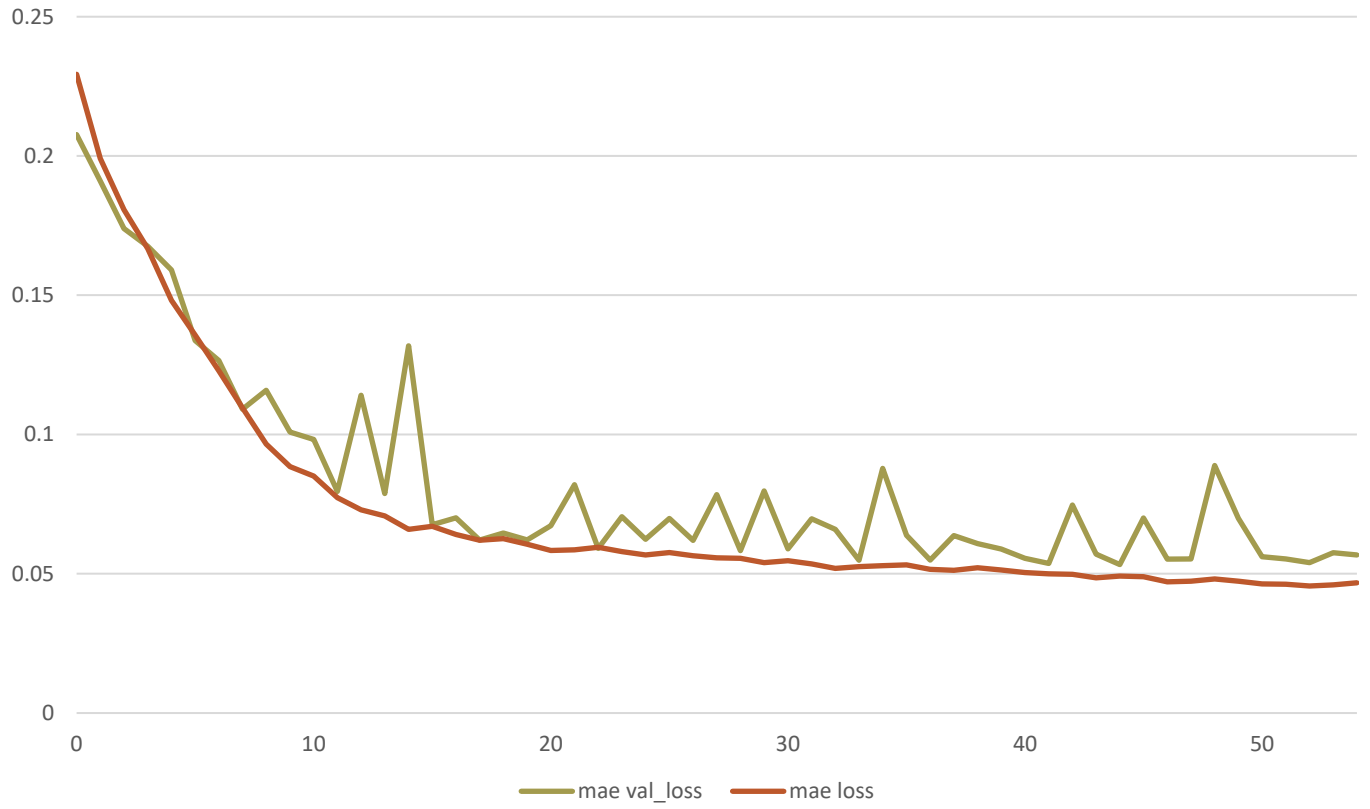
- Bottlenecking issue

Initial Results

Metrics:

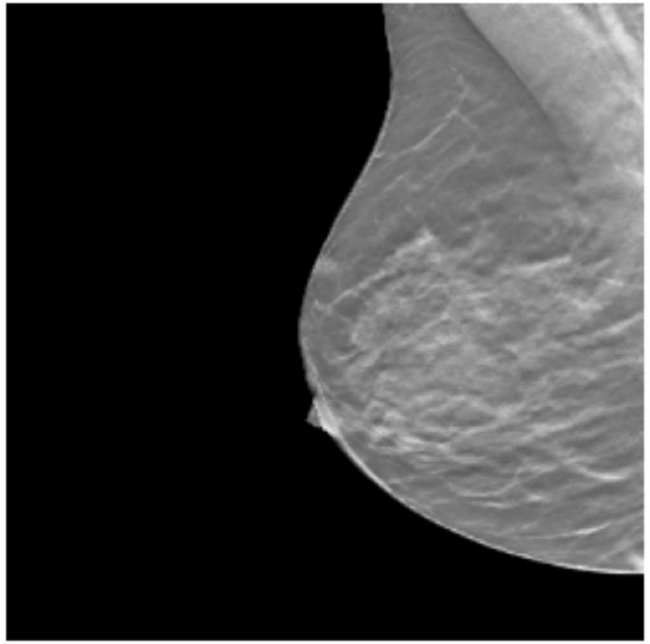
- MAE
- MSE
- MAPE

Lowest val_loss: 0.04-0.05



Experiments

- LR Scheduler – 1% decay rate every 100 steps
- Scaling the ground truth
- Removed sigmoid activation function
- Hyperparameter tuning: L2 regularizer, dropout, # of epochs
- Updated results for Linear Regression Model: 0.034-0.025 mae val_loss



Range = [0.0, 0.4]
Scaled by 2.5x

Ground truth
0.3847 ➔ 0.9618

Outliers

- Might be due to learning rate scheduler