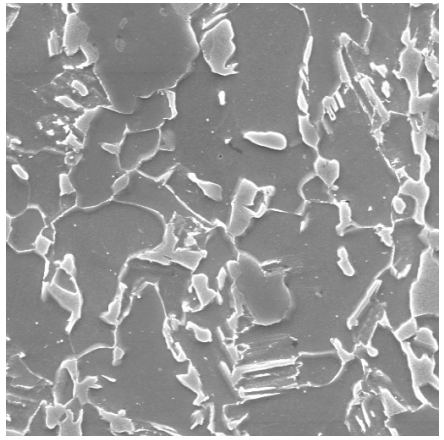
Steel Image Segmentation

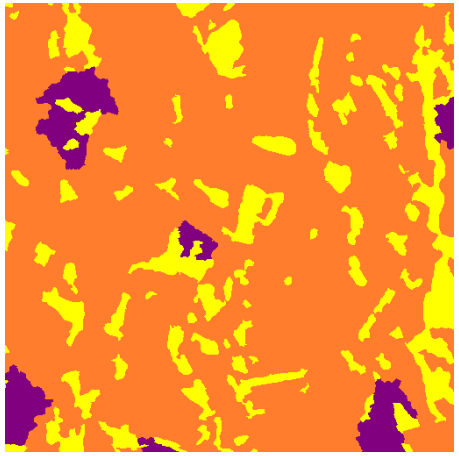
Progress Report

Bishal

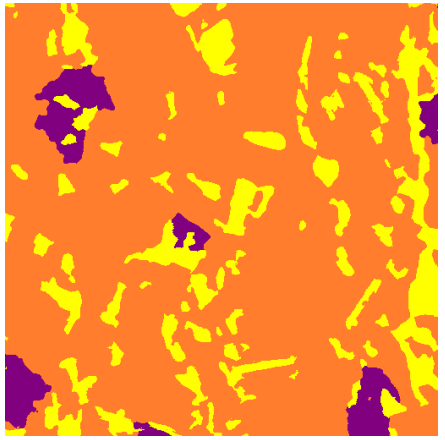
Model Output



Input Test Image



Input Label Image



Output Test Image

Validation mIOU → 0.491552 0.481737

Validation Acc → 97.96 97.44

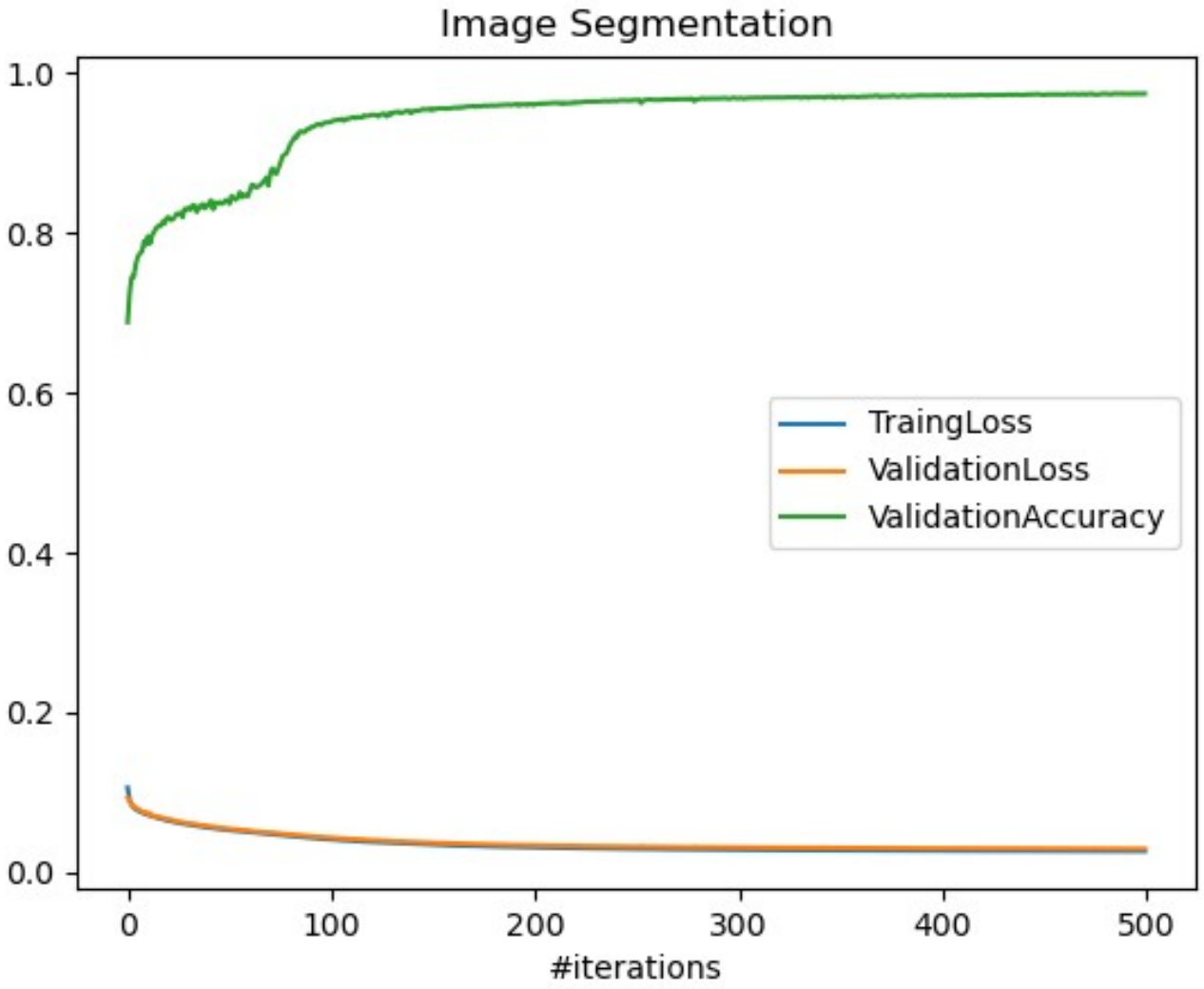
Test Accuracy → 91.99

Dice Coefficient → 0.922 (avg of 48 test images)

Traning mIoU → 0.494630

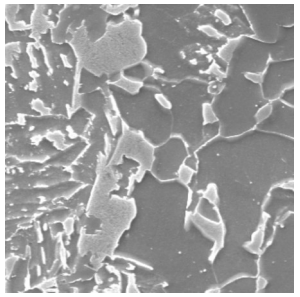
Training Acc → 98.91

Model Performance

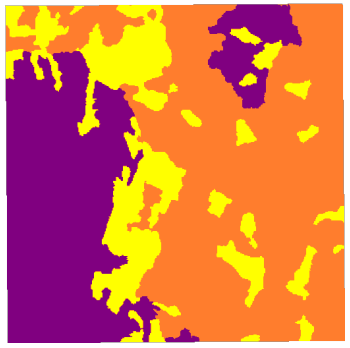


Samples of Test Images

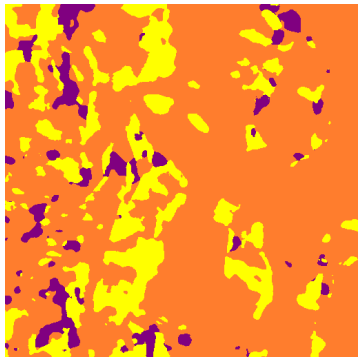
Image having Min. Dice Coefficient → 0.655



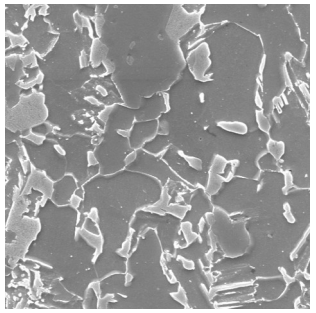
Input Test Image

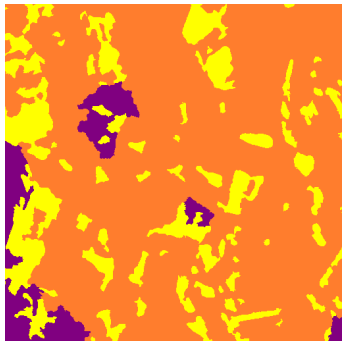


Input Label Image



Output Test Image





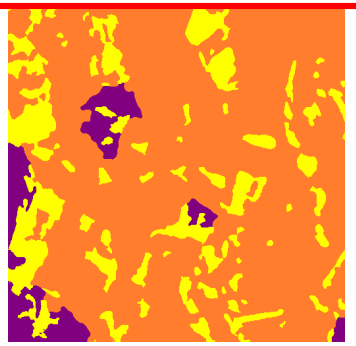


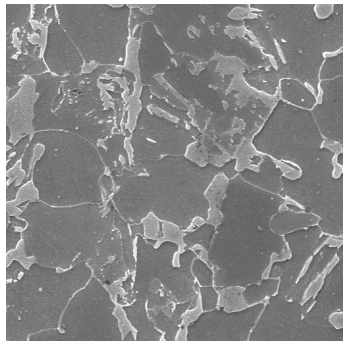
Image having Max. Dice Coefficient → 0.99

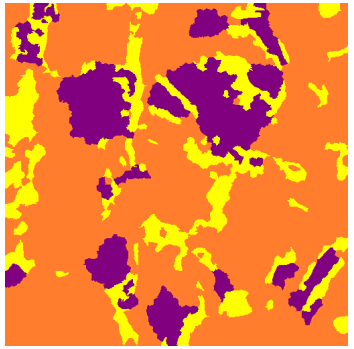
With Magnified Images

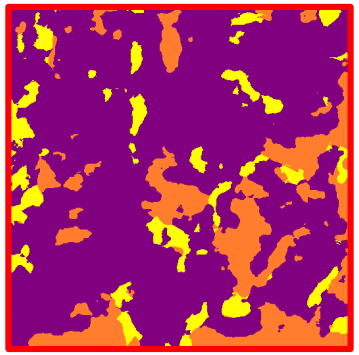
Magnified images used as test images for the model trained on original images.

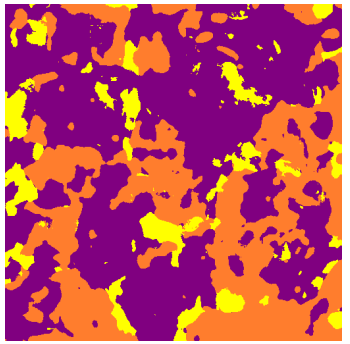
Previous Result

New Result





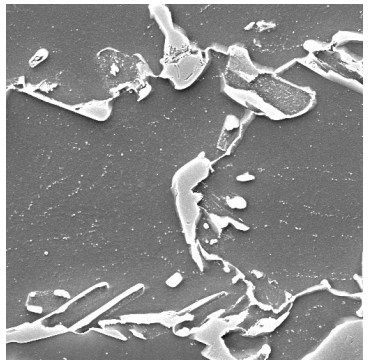


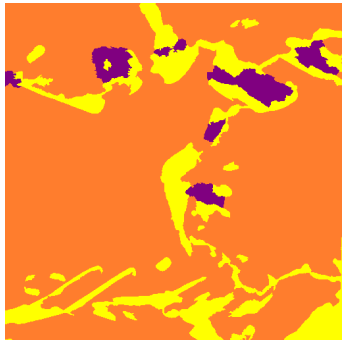


← x3000 Magnification images

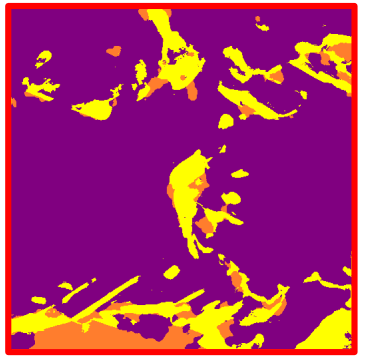
Dice Coefficient → 0.557 0.411

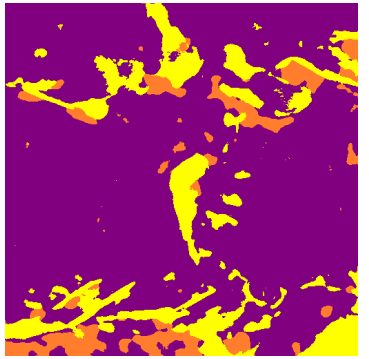
x5000 Magnification → images





Dice Coefficient → 0.22 0.22





Previous Result

Observation

- There were some performance improvements in the results. But the model still doesn’t do well with magnified images.
- The model predicted the lighter patterns in the images more accurately but struggled with gray regions.
- Magnification and sliding window augmentation was using to generate images.
- While training the model, 15780 images were used as train images, 426 images were used for validation, 48 images were used for testing.