CSE455 Final Project

Medical Image Segmentation

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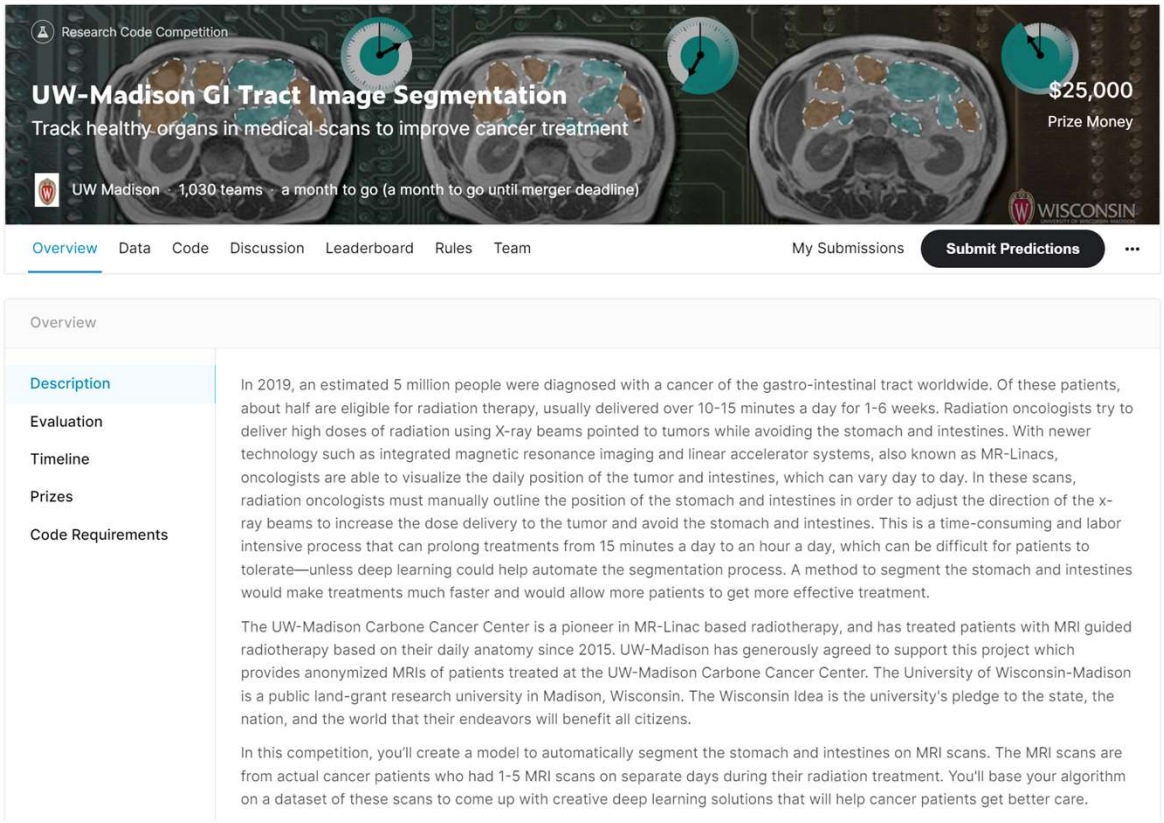
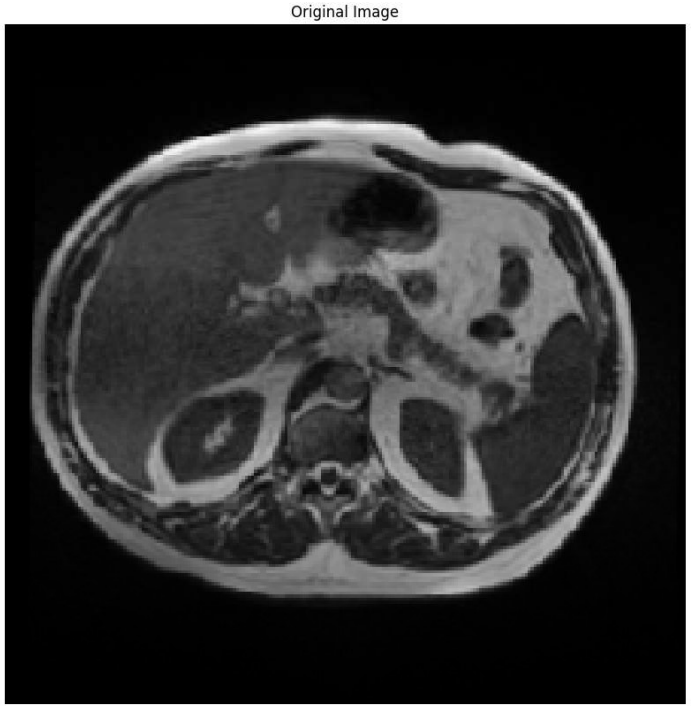
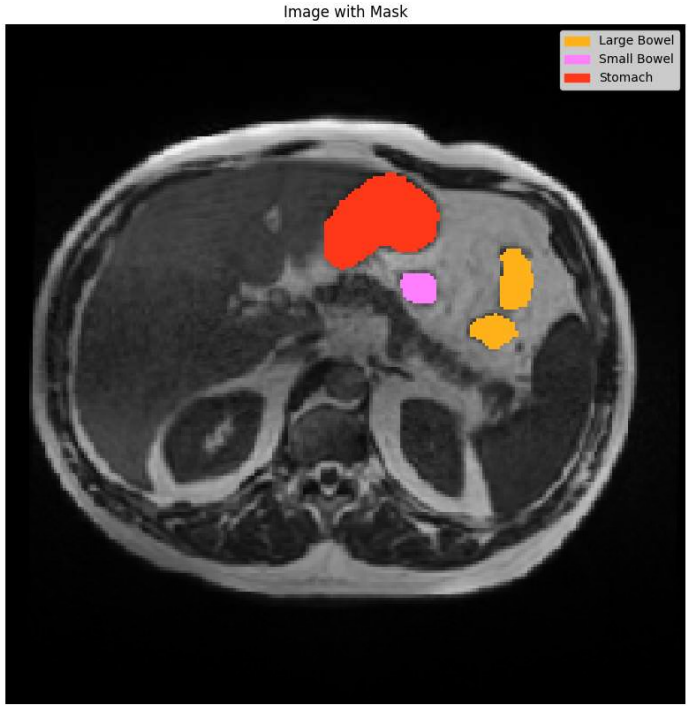
Task



Website: https://www.kaggle.com/competitions/uw-madison-gi-tract-image-segmentation/overview

Dataset

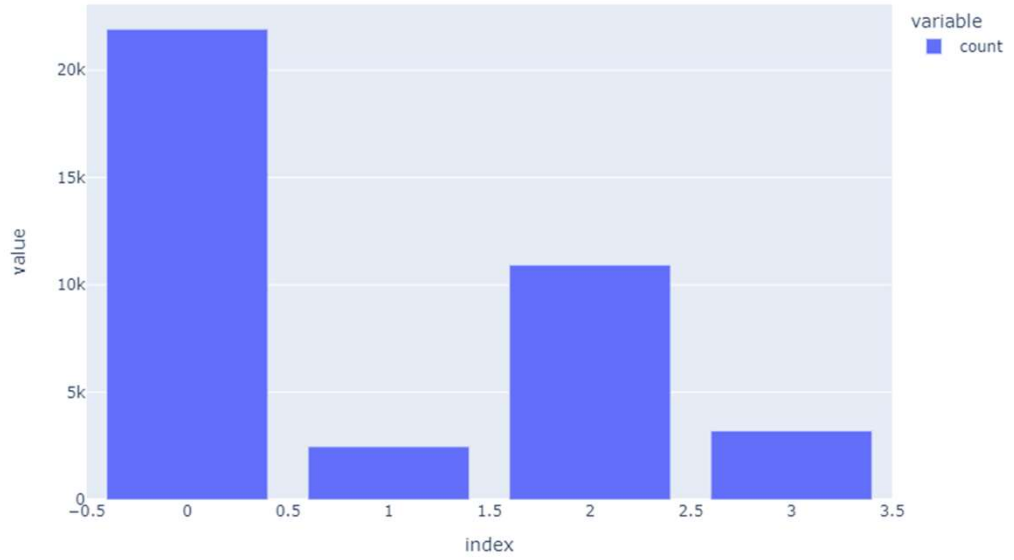


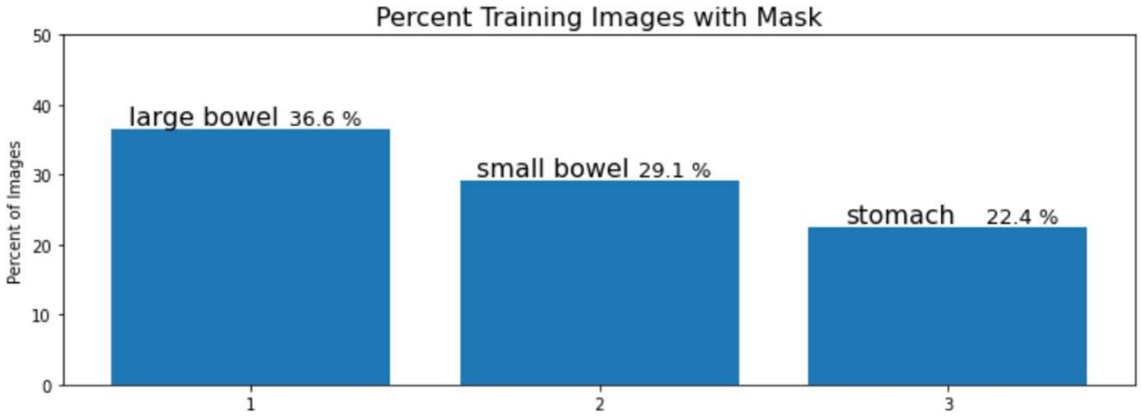


Note: Dataset provided by the Kaggle Competition.

Preprocessing

- Biased Dataset:
  - 38,496 total images
  - >50% has no labels
  - Uneven distribution among given 3 classes

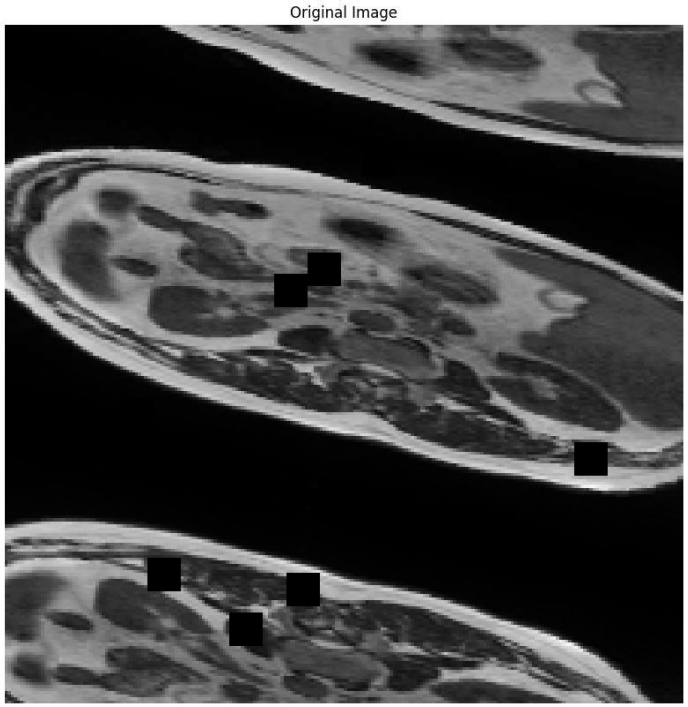


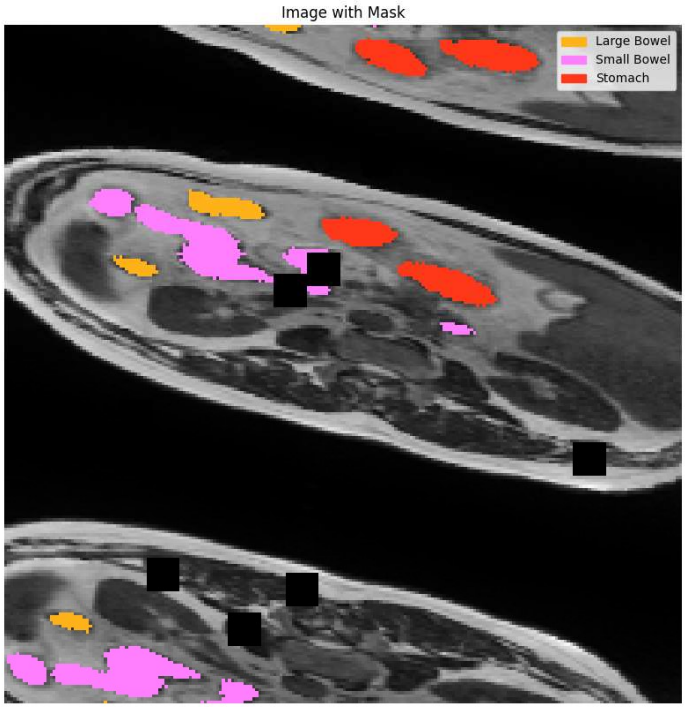


Website: https://www.kaggle.com/code/ammarnassanalhajali/uwmgi-unet-pytorch-train-with-eda#EDA

Preprocessing

- Data Augmentation





Training

- Unet + EfficientNet b1
- Loss Criterion:
  - 0.5 * BinaryCrossEntropy + 0.5 * TverskyLoss
- Hyperparameters:
  - LR: 1e-3
  - Epoch: 15
  - Batch_size: 96
  - Image_size: [224, 224]
  - Lr-scheduler: CosineAnnealingLR
- Cross Validation:
  - Multiple folds cross validation adaptable, but single fold training due to time and computation constraints
- Training Curve:
  - Wandb: https://wandb.ai/alanlee/uw-maddison-gi-tract/runs/39wyhil5?workspace=user-alanlee

Prediction (Demo)

- ./pred_demo.ipynb