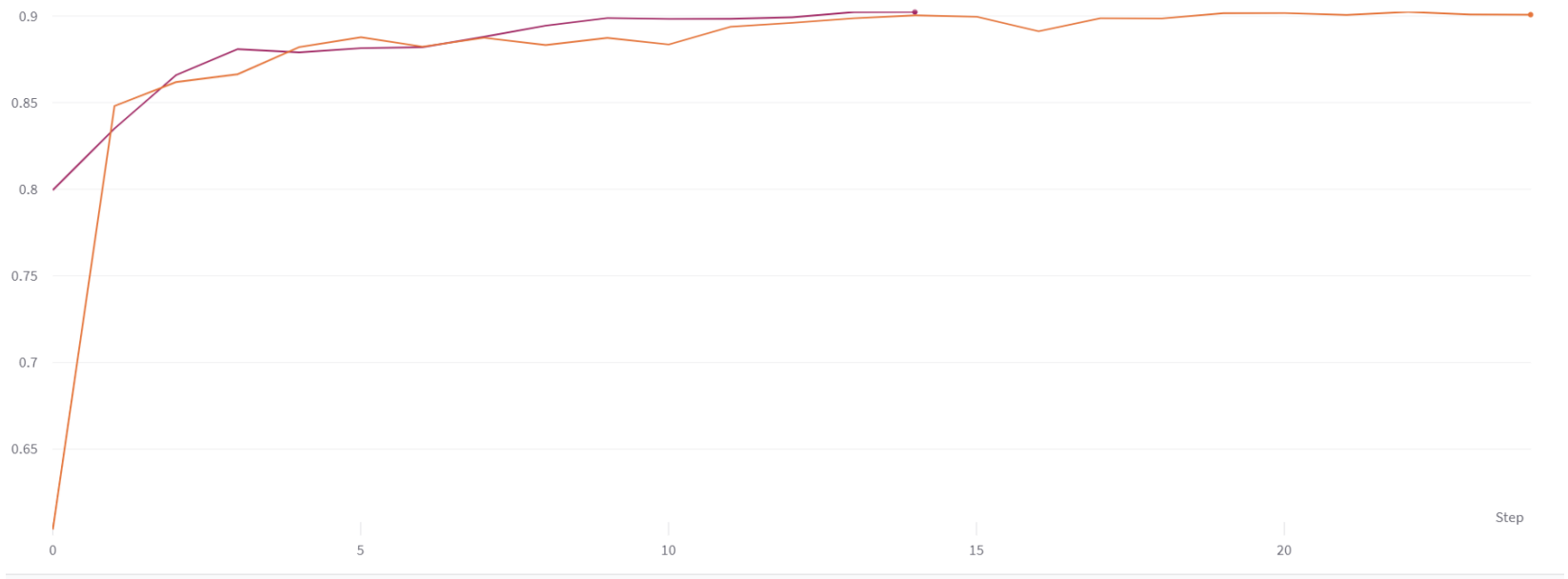
SIMPLE PRESENTATION FOR COMPETITION UW-MADISON AND PREPARATION FOR HUMAP

UW-MADISON GI TRACT IMAGE SEGMENTATION

BOTAO JIANG MINGZIRUI WU

IN LAST PRE…

Mixup Data Augmentation Strategy



- The highest dice for 15 epochs is 0.9023 at epoch 15.
- The highest dice for 25 epochs is 0.9024 at epoch 23.
- It seems not efficient!

IN LAST PRE…

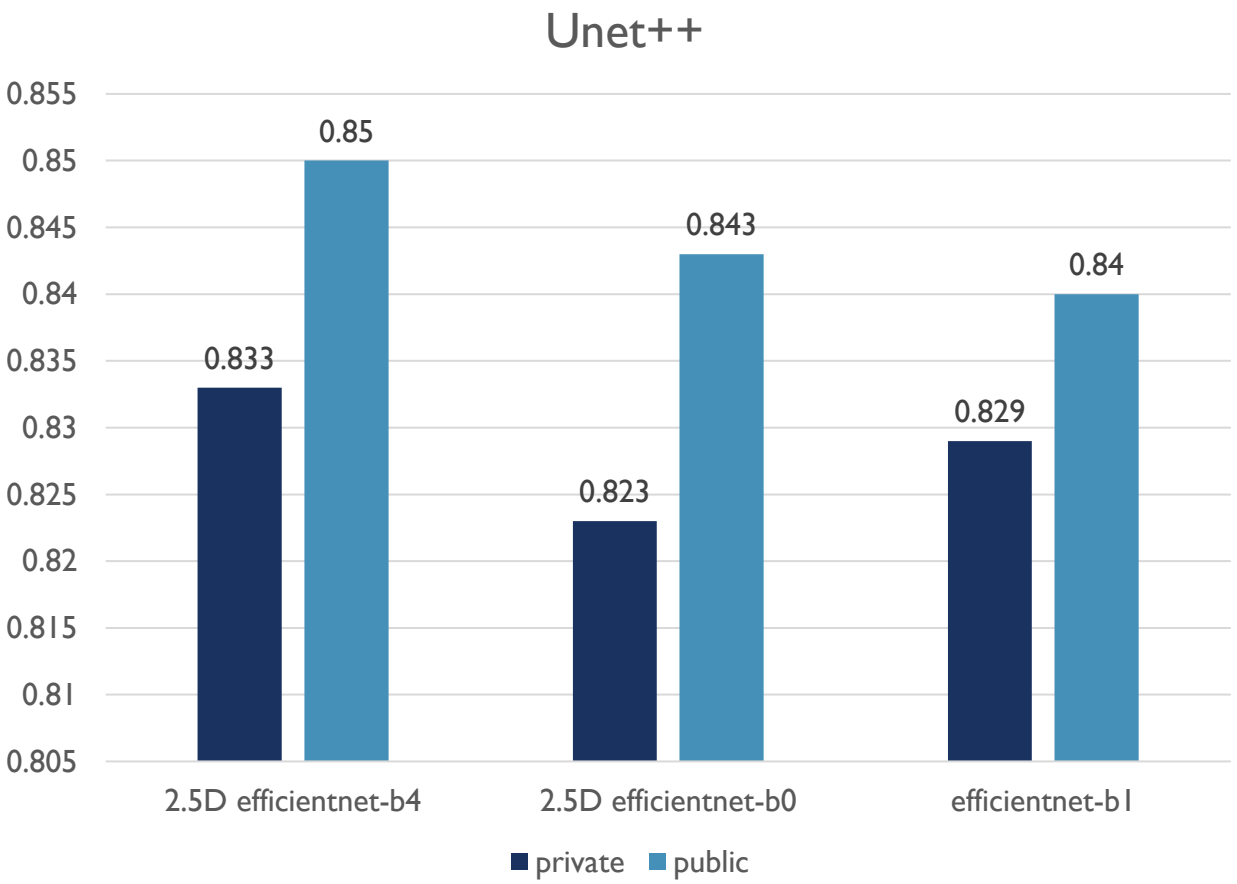
UWMGI: Unet [Infer] [PyTorch] unet++-efficientnet-b1 with Mixup BCE&Dice v2 (version 10/10) 2 days ago by KaggleJbt Notebook UWMGI: Unet [Infer] [PyTorch] | unet++-efficientnet-b1 with Mixup BCE&Dice v2	Succeeded	0.830	0.836	☐
UWMGI: Unet [Infer] [PyTorch] Unet++ Efficientnet-b1 Mixup Dice+CE (version 9/10) 3 days ago by KaggleJbt Notebook UWMGI: Unet [Infer] [PyTorch] | Unet++ Efficientnet-b1 Mixup Dice+BCE	Succeeded	0.825	0.833	☐
UWMGI: Unet [Infer] [PyTorch] Unet++ with Efficientnet_b1_success_2 (version 8/10) 4 days ago by KaggleJbt Notebook UWMGI: Unet [Infer] [PyTorch] | Unet++ with Efficientnet_b1_success_2	Succeeded	0.829	0.840	☑

FINAL RESULTS ON 2.5D DATA

UWMGI: 2.5D [Infer] [PyTorch] Unet++ 2.5D dataset with efficientnet-b4 epoch 15 (version 5/5 11 hours ago by KaggleJbt Notebook UWMGI: 2.5D [Infer] [PyTorch] | Unet++ 2.5D dataset with efficientnet-b4 epoch 15	Succeeded	0.833	0.850	☐
UWMGI: 2.5D [Infer] [PyTorch] 0.5BCE+0.2Tv+0.3Dice (version 5/5) 15 hours ago by cenxun Notebook UWMGI: 2.5D [Infer] [PyTorch] | 0.5BCE+0.2Tv+0.3Dice	Succeeded	0.810	0.829	☐
UWMGI: 2.5D [Infer] [PyTorch] 0.2*BCELoss+0.8*DiceLoss (version 4/5) 20 hours ago by cenxun Notebook UWMGI: 2.5D [Infer] [PyTorch] | 0.2*BCELoss+0.8*DiceLoss	Succeeded	0.804	0.820	☐
UWMGI: 2.5D [Infer] [PyTorch] unetplusplus-efficientnet_b0 (version 4/5) a day ago by KaggleJbt Notebook UWMGI: 2.5D [Infer] [PyTorch] | unetplusplus-efficientnet_b0	Succeeded	0.823	0.843	☑
UWMGI: Unet [Infer] [PyTorch] unet++-efficientnet-b1 with Mixup BCE&Dice v2 (version 10/10 2 days ago by KaggleJbt Notebook UWMGI: Unet [Infer] [PyTorch] | unet++-efficientnet-b1 with Mixup BCE&Dice v2	Succeeded	0.830	0.836	☐
UWMGI: 2.5D + timm-reg [Infer] [PyTorch] UnetPlusPlus_timm-regent008_epoch5 (version 1/1) 2 days ago by cenxun Notebook UWMGI: 2.5D + timm-reg [Infer] [PyTorch] | UnetPlusPlus_timm-regent008_epoch5	Succeeded	0.806	0.829	☐
UWMGI: 2.5D [Infer] [PyTorch] Unet++ 2.5D dataset with resnet34 _2 (version 2/5) 2 days ago by KaggleJbt Notebook UWMGI: 2.5D [Infer] [PyTorch] | Unet++ 2.5D dataset with resnet34 _2	Succeeded	0.700	0.714	☐

- The greatest one is Unet++ with efficientnet-b4 at epoch 15: 0.833
- Basing on Unet++ with efficientnet-b0, we tried different loss functions, but failed.
- Higher results cost more time:
  - Efficientnet-b4: 19M parameters; 2.5 times of b1
  - 2:20 per epoch
  - 1 hour for submitting

FINAL RESULTS



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  - Efficientnet-b4: 19M parameters; 2.5 times of b1
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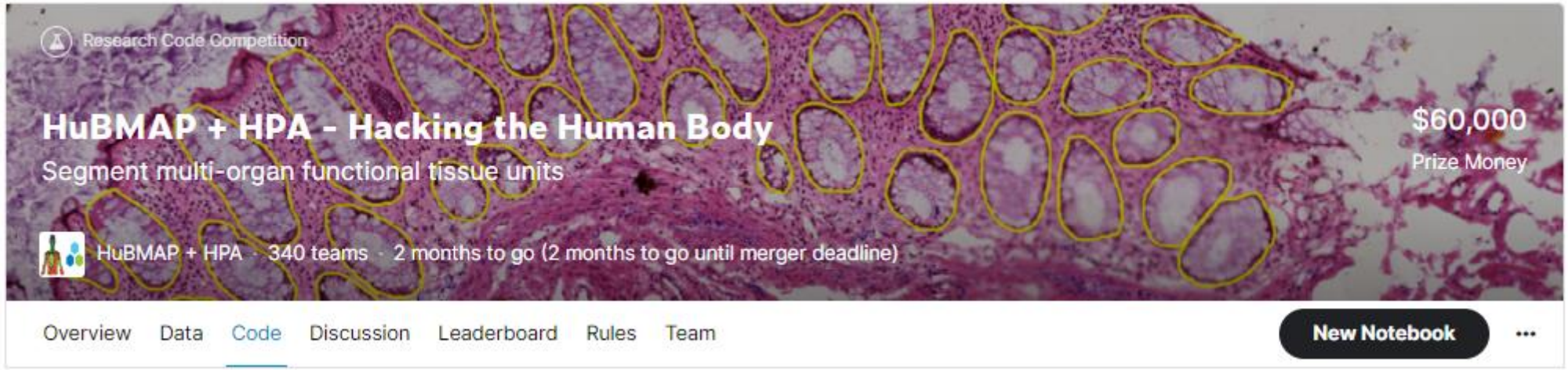
ADDITIONAL INFORMATION

UWMGI: Unet [Infer] [PyTorch] (version 1/1) 7 days ago by cenxun Notebook UWMGI: Unet [Infer] [PyTorch] | Version 1	Succeeded	0.830	0.838	☐
UWMGI: Unet [Infer] [PyTorch] Unet_with_resnet34_success (version 5/10) 5 days ago by KaggleJbt Notebook UWMGI: Unet [Infer] [PyTorch] | Unet_with_resnet34_success	Succeeded	0.815	0.823	☐

- The Unet private score is even higher than Unet++!
- The difference between Unet++ private and public scores is larger than those in Unet architecture.

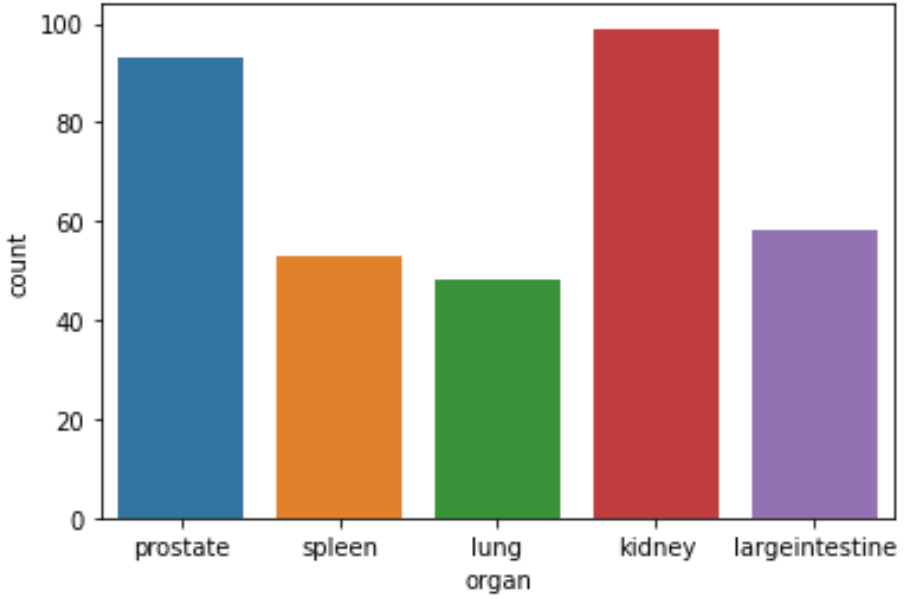
FUTURE PLAN

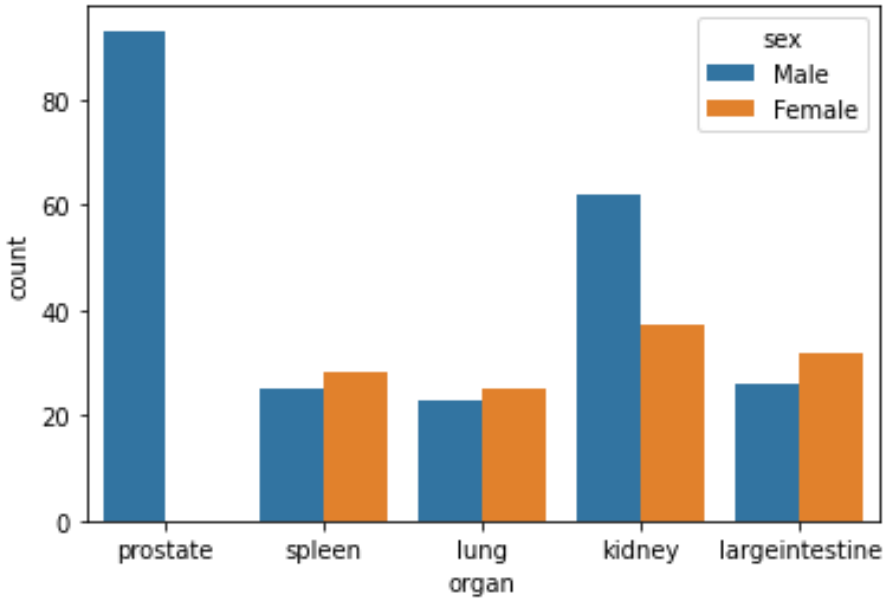


- Task: Identify and segment functional tissue units (FTUs) across five human organs

FUTURE PLAN

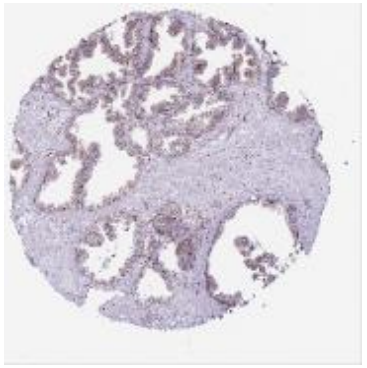
- Five human organs.
- Images Size: 3000 x 3000.
- 351 Train Cases, One with One Mask.

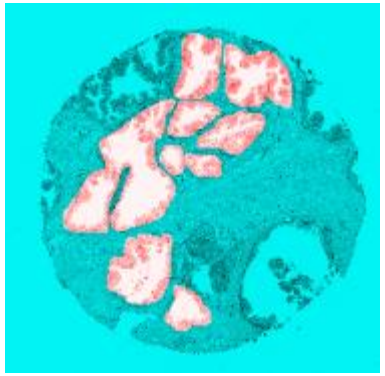




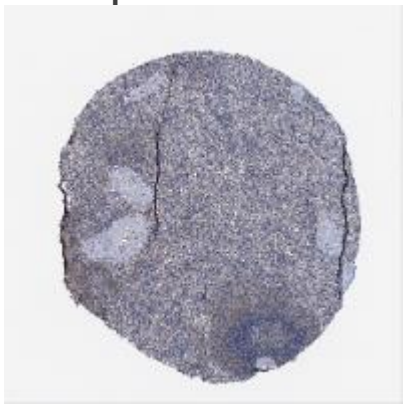
CASE SAMPLE

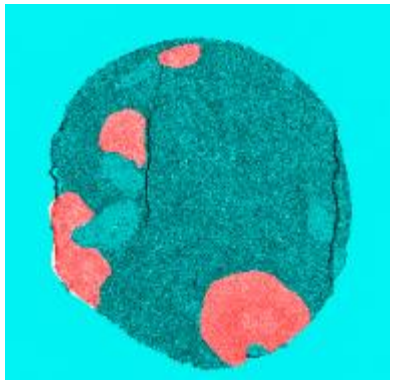
- Prostate



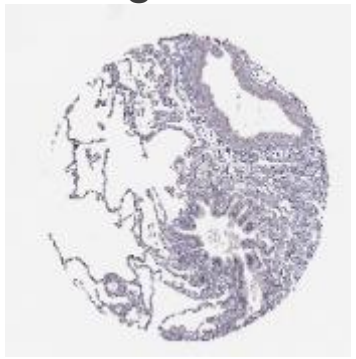


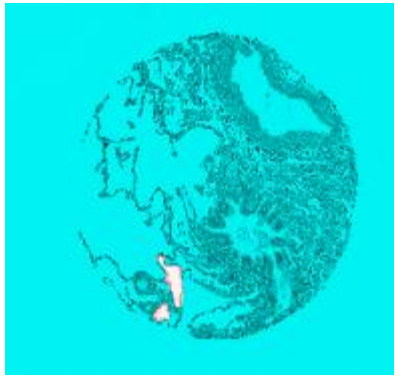
- Spleen



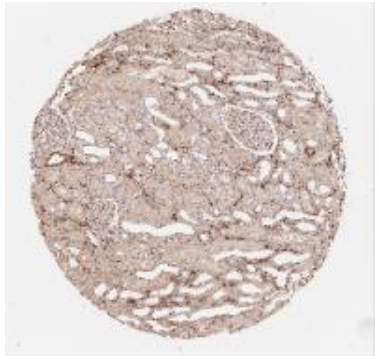


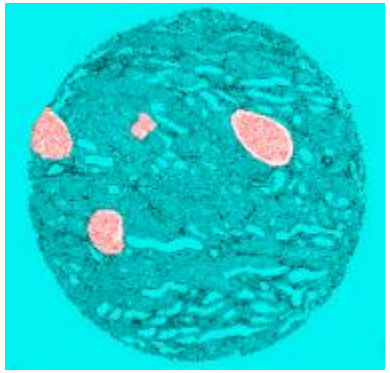
- Lung





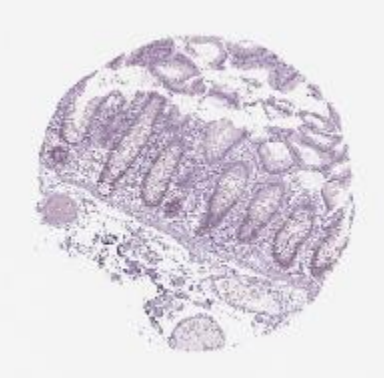
- Kidney

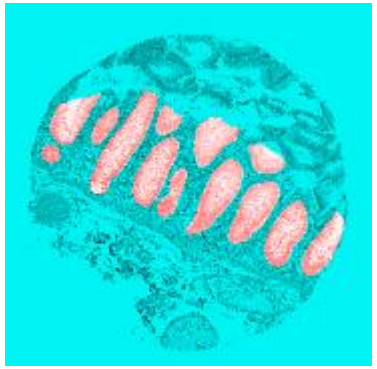




CASE SAMPLE

- Large intestine





- File format
  - Imgae: .tiff
  - Mask: .json
- Document Directory Structure

Data Explorer

9.39 GiB

- test_images
- train_annotations
- train_images
- sample_submission.csv
- test.csv
- train.csv

Thank you!