HuBMAP + HPA – Hacking the Human Body

Progress Meeting11 Group A

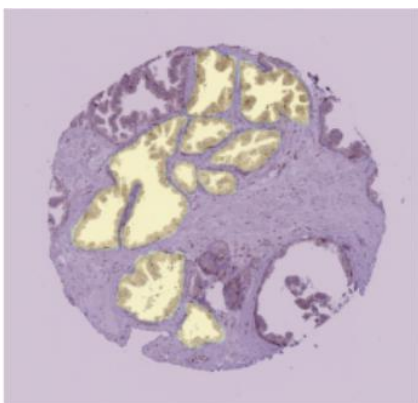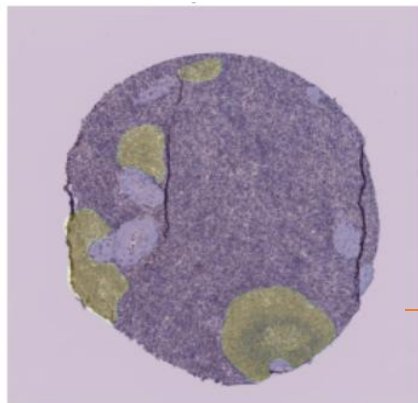# CONTENTS

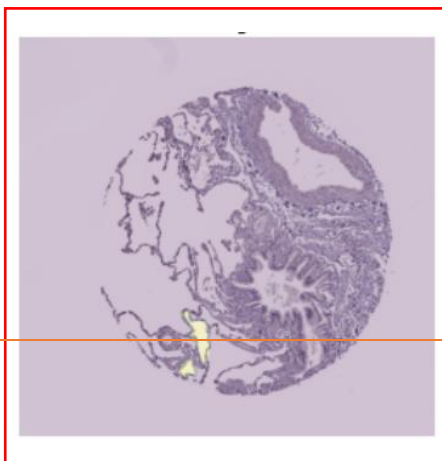Many features of labels would be destroyed after being cut.

Especially for lung images, the label of lung images is small compared to other organs, so if they are cut apart and the features are destroyed, the training effect will become very poor.
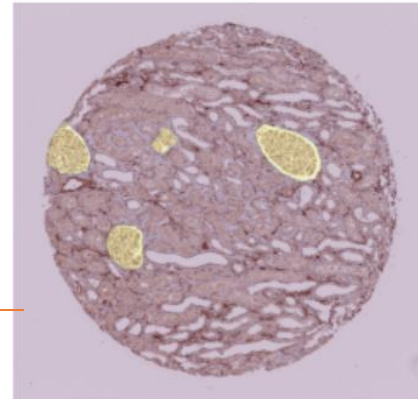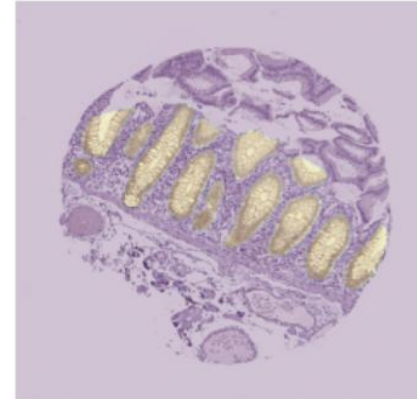

| Prostate | Spleen | Lung | Kidney | Largeintestine |

```
Better model found at epoch 0 with dice_th value: 0.11175310611724854.
Better model found at epoch 1 with dice_th value: 0.122260030230522156.
Better model found at epoch 3 with dice_th value: 0.14181286096572876.
Better model found at epoch 4 with dice_th value: 0.14627055823802948.
Better model found at epoch 6 with dice_th value: 0.1484823077917099.
Better model found at epoch 11 with dice_th value: 0.16871078312397003.
Better model found at epoch 12 with dice_th value: 0.16912923753261566.
```

To avoid this problem, we try not to cut the image, but train with the whole image to preserve the overall features of the label

1. Directly use 3000×3000 image

```
TRAIN = '../input/hubmap-organ-segmentation/train_images/'
LABELS = '../input/hubmap-organ-segmentation/train.csv'
```

2. Resize them to 768×768

```
img = cv2.resize(img, (768, 768))
mask = cv2.resize(mask, (768, 768))
```

3. Adjust batchsize to 8

unext50 + full-image   unext50 + full-image+augmentation   efficientnet + full-image+augmentation

Succeeded	0.56

Succeeded	0.71

Succeeded	0.74

Succeeded	0.62

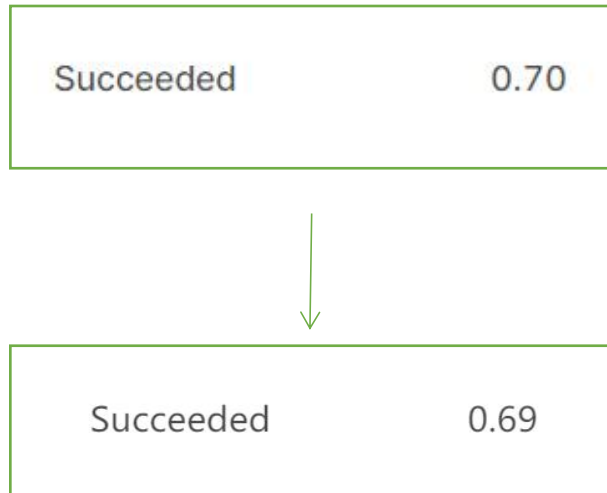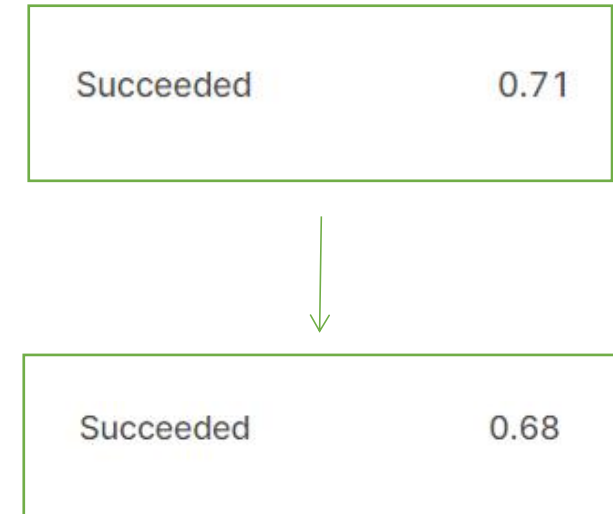We use five additional channels to represent the information of five different organs.
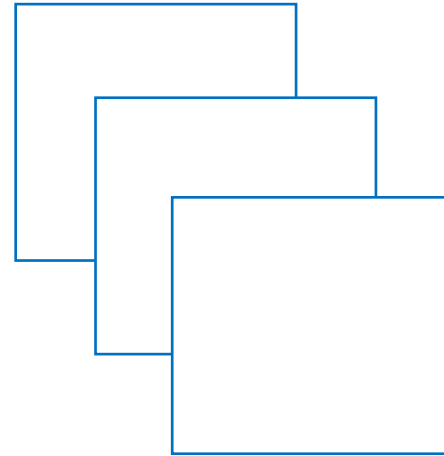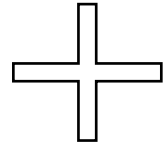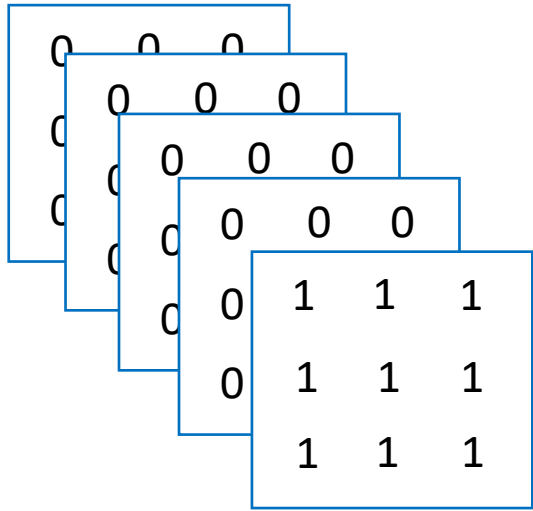
RGB

**Change the input data
channel from 3 to 8**

When multimodal is applied in the effincientnet：

unext50 + full-image+augmentation+multimodal

Succeeded	0.70

↓

Succeeded	0.69

Succeeded	0.71

↓

Succeeded	0.68

Possible reason: We use the cut image for training, as the label is cut into small pieces, the difference between each organ becomes less obvious, then the multimodal may not play its maximum role.

Possible solution: Use the full images for training, the gap between different organs may be more obvious.

- Use full size images to multimodal to see if we can get a higher mark

- Resize full size images from 3000 to 1024

- Try our previous methods that failed in efficientnet (for example: stain norm) by using full image

Thanks for listening