III. Model documentation and write-up

Information included in this section may be shared publicly with challenge results. You can respond to these questions in an e-mail or as an attached file. Please number your responses.

1. Who are you (mini-bio) and what do you do professionally? If you are on a team, please complete this block for each member of the team.

I'm an independent Software Developer/Data Scientist interested in hard algorithmic challenges and machine learning

2. What motivated you to compete in this challenge?

I love to solve such challenges, participating on other similar platforms as well. This one gave me the chance to improve my segmentation models.

3. High level summary of your approach: what did you do and why?

Ensemble of Unet-like segmentation models. More details in readme

4. Do you have any useful charts, graphs, or visualizations from the process?

No

5. Copy and paste the 3 most impactful parts of your code and explain what each does and how it helped your model.

```
#right optimizer
 optimizer = SGD(params, lr=2e-3, momentum=0.9)


 #suitable loss
 combo_loss = ComboLoss({'jaccard': 1.0, 'focal': 0.1}, per_image=True).cuda()


 # Weighted metric by Location!
 _locs = list(by_loc.keys())
 _sc_weighted = 0
 _iou_weighted = 0
 for i in range(len(_locs)):
     l = _locs[i]
     _iou0 = np.mean(by_loc[l][0])
     _int = np.sum(by_loc[l][1])
     _un = np.sum(by_loc[l][2])

     _sc0 = 0
     if _un > 0:
```

```
            _sc0 = _int / _un

        _sc_weighted += _sc0
        _iou_weighted += _iou0

    _sc_weighted /= len(_locs)
    _iou_weighted /= len(_locs)
```

6. Please provide the machine specs and time you used to run your model.

cpu: threadripper 1920x gpu: 4 * Titan V memory: 64gb os: Ubuntu train: ~1 day, test: 3 hours

7. Anything we should watch out for or be aware of in using your model (e.g. code quirks, memory requirements, numerical stability issues, etc.)?

In readme

8. Did you use any tools for data preparation or exploratory data analysis that aren't listed in your code submission?

No

9. How did you evaluate performance of the model other than the provided metric, if at all?

Weighted metric by Location (code in answer 5)

10. What are some other things you tried that didn't necessarily make it into the final workflow (quick overview)?

Additional bands did not work

11. If you were to continue working on this problem for the next year, what methods or techniques might you try in order to build on your work so far? Are there other fields or features you felt would have been very helpful to have?

Use the winning models to clean the data and review bad cases.