Coding Challenge – Sereact Instance Segmentation

NOTE: If you find an open-source model that does the task quite well, this is a bonus. Transfer learning is key to solving these kinds of problems.

Tasks:
Develop a deep learning pipeline (model + code infrastructure) for instance segmentation

Requirements:

- Preferably written in Pytorch, but other DL frameworks can also be used. Utils libs such as albumentations, kornia, … can also be adopted.
- End-to-end fully functional pipeline: Preprocessing ->
- data loading -> model + train loop -> test loop -> Inference optimization (optional, but with be a big bonus point if candidate can convert models into lower-precision format or universally deployable format such as ONNX or TensorRT).
- Brief documentation of how the candidates choose the architecture/ loss function to tackle the problem or how the code works (diagram will be nice here also).
- Candidates can choose their own metrics to measure the performance of the model.
- Models should not exceed > 100M params and pretrained models can also be adopted. Usage of transformers architecture inside the model will also be a bonus point.
- Showing the training and testing logs as well as output predictions visualization to verify the approach.

Data:

- RGB, ground truth 3d bounding box, point cloud and instance segmentation mask.

Note:
The test does not expect the candidate to fulfill all the requirements since this is a fairly hard problem given the limited data and time budget. What is important is the candidate showing competent coding skill with deep learning framework as well as his/her approach to a complex technical problem.

Data link:
https://drive.google.com/file/d/11s-GLb6LZ0SCAVW6aikqImuuQEEbT_Fb/view?usp=sharing