Coding Challenge – Sereact

Tasks:
Develop a deep learning pipeline (model + code infrastructure) for 3D bounding box prediction problem

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. Though the use of ChatGPT or any LLM of any similar type is not prohibited, relying completely on such tools for this challenge can be easily detected and considered as cheating.

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