

Weekly Progress Report

Sept 6th - 10th, 2021

Presented by Yannis (Yiming) He 84189287

Noah's Ark | Autonomous Driving Lab
LiDAR Domain Adaptation

Manager: Bingbing Liu 00435285
Supervisor: Eduardo Corral Soto 00407762



- Sept 6th (Monday)
 - Labour Day → No work
- Sept 7 (Tuesday):
 - Discussion with Alonso for the docker build for CenterPoint
 - He is not sure what is causing the issue either.
 - What should be the next step? Who else should I reach out to.
 - To Eduardo: Could you try build the docker and see how it goes on your side
 - HYLDA Paper proofread
- Sept 8 (Wed)
 - Finish the paper proofread and comments
 - Modify the testing pipeline for TSIT
 - Changing input, dataloaders, etc
 - Use the validation set of the dataloader instead of testing set
 - Continue training that got interrupted (24/200 epoch)
 - Building the testing pipeline (done)

- Sept 9th (Thurs)
 - Try testing on current checkpoint:
 - 20th epoch
 - → no meaningful result
 - TODO:
 - Add Resize back to 64 x 2048 into the pipeline for a better references
 - Test the result after 200 epoch finished (estimated finishing on Friday night)
 - Deliver the paper proofread to Eduardo
- Sept 10th (Friday)
 - Docker development for CenterPoint
 - Meeting with Alonso

End of September 10th, Weekly Report

Weekly Progress Report

Sept 13th - 17th, 2021

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- Sept 13th (Monday)
 - TSIT training finished (200 epoch)
 - Merging the validation dataset for source domain (SKITTI) into the testing pipeline
 - CenterPoint Docker:
 - 1st issue:
 - Background:
 - We (Huawei) have limitation to pull docker image from the DockerHub
 - 100 pull per 6 hours from 1 ID (whoever use the SPES and connect to VPN)
 - I.e. we can only use docker image saved on our gitlab
 - registry.kyber.team/kyber/kyber-tools
 - Issue: We don't have "pytorch 1.6.0 (version used by Xingxin's docker)" image in our gitlab
 - Alonso suggest: use pytorch 1.7.1 instead, assuming there is no big difference
 - I.e.
 - Replacing:

FROM pytorch/pytorch: 1.6.0-cuda10.1-cudnn7-devel

- With

FROM registry.kyber.team/kyber/kyber-tools/pytorch: 1.7.1-cuda11.0-cudnn8-devel

- Result: It passed by the pull from dockerhub
- Questions to Xingxin: Does the version matter?

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- Sept 13th (Monday) (CONT')
- CenterPoint Docker (cont'):
 - 2nd issue:
 - Background:
 - Xingxin, Mrigank, Aich are able to build the dockers on their server without issues
 - Both Eduardo and I cannot
 - Issue:
 - Alonso: "it probably has to do with how they configured the servers"
 - Potential solution (to be tried today)
 - Configure the docker clients on our server
 - Alonso said this approach is troublesome
 - It would be great if Xingxin can push his docker image to our gitlab so I can pull from there
- TODO:
 - Proofread the updated ICRA paper
 - To be received

- Sept 13th (Monday) (CONT')
 - HYLDA Paper:
 - Making the videos for ICRA presentation (deadline Sept 19th):
 - Requirements:
<https://www.icra2022.org/contribute/call-for-papers#:~:text=The%20ICRA%202022%20conference%20will,program%20in%20the%20following%20ways>.
 - Format: MP4
 - File Size: < 20 Mb
 - Video Size: height > 480p
 - FPS: > 20
 - Finished, waiting for feedback from Eduardo
 - CenterPoint
 - Discussion with Xingxin for Docker
 - Received docker image as a zip file (to be tried once finishing ICRA video)
- Sept 14th (Tuesday)
 - HYLDA Paper (completed)
 - Received feedback from Eduardo for video
 - Edited accordingly and re-delivered
 - Proof read the newest HYLDA paper
 - Suggestions to modification (delivered)

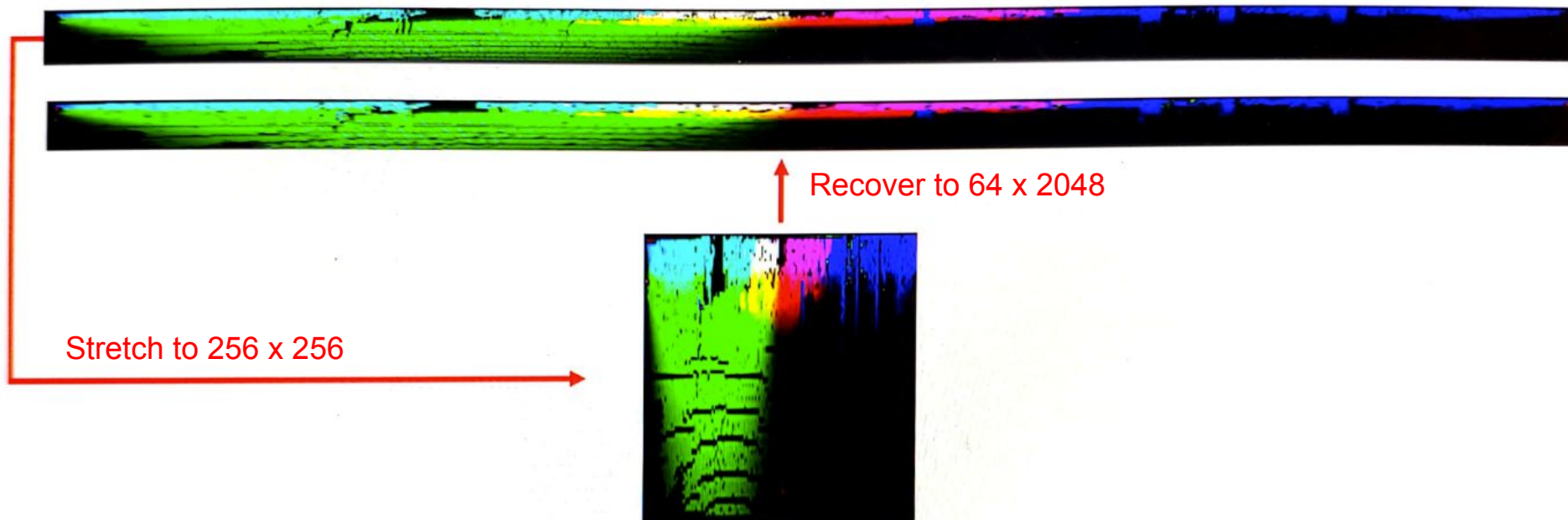
- Sept 14th (Tuesday) (CONT')
 - CenterPoint
 - Copy the docker image zip file to gx9 (in progress)
 - TODO:
 - Try pull the docker directly from the registry.kyber.team
 - Look into CenterPoint 3D Object detection baseline
 - TSIT:
 - Test the model output with validation set
 - Issue:
 - Data Split file not detected (resolved)
 - TODO: Run the testing
- Sept 15 (Wednesday):
 - CenterPoint
 - Tried to pull docker uploaded by Xingxin from registry.kyber.team

```
docker pull registry.kyber.team/kyber/kyber-perception/semida-det:once-0.0.1
```

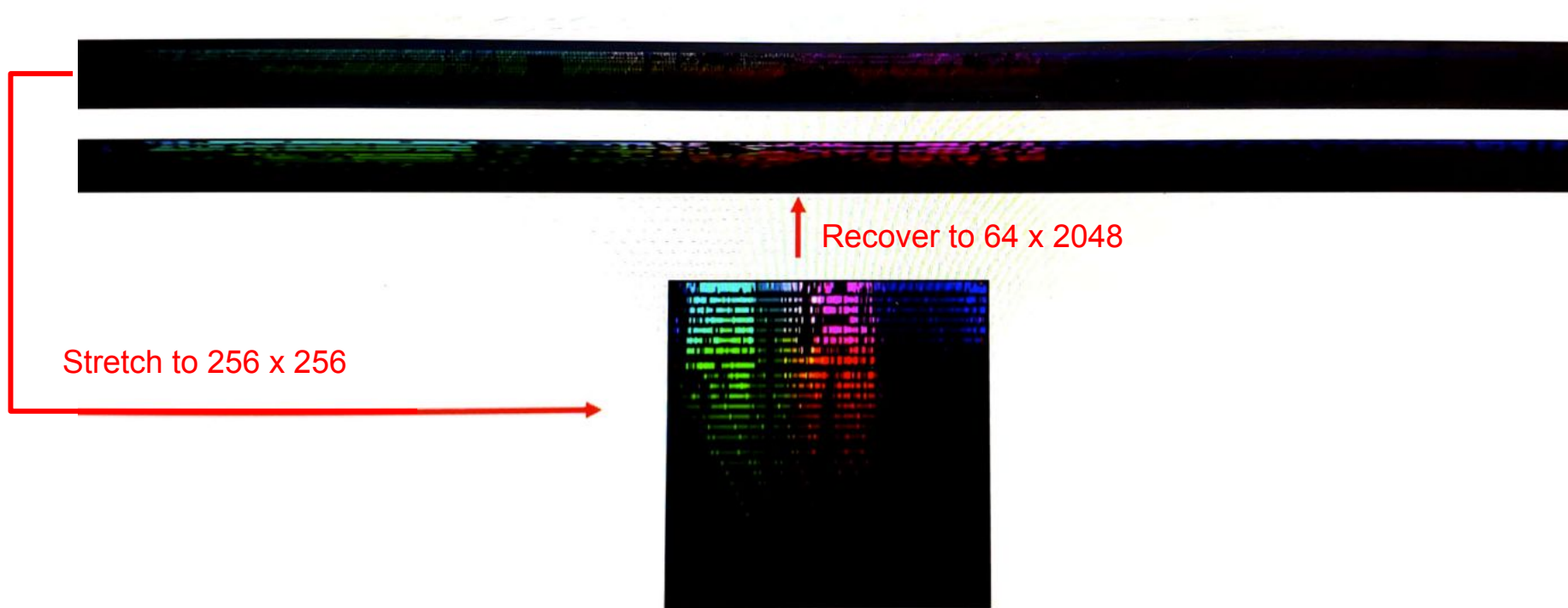
- Having issue access the repo
 - Error: unauthorized account (but Alonso gave me access)
 - seeing a white screen when going to <https://registry.kyber.team>
 - Server might be down?

- Sept 15 (Wednesday) (CONT'):
 - TSIT:
 - Conduct comparison for stretching effect
 - OK for SKITTI, a bit distorted for nuScene
 - Potential solution: Hole filling
 - Finished the validation for style transfer from SKITTI to nuScene
 - Doesn't looks really good

Validation Set - SKITTI



Validation Set - nuScenes



Holes Filling (Top: before vs Bottom: after)

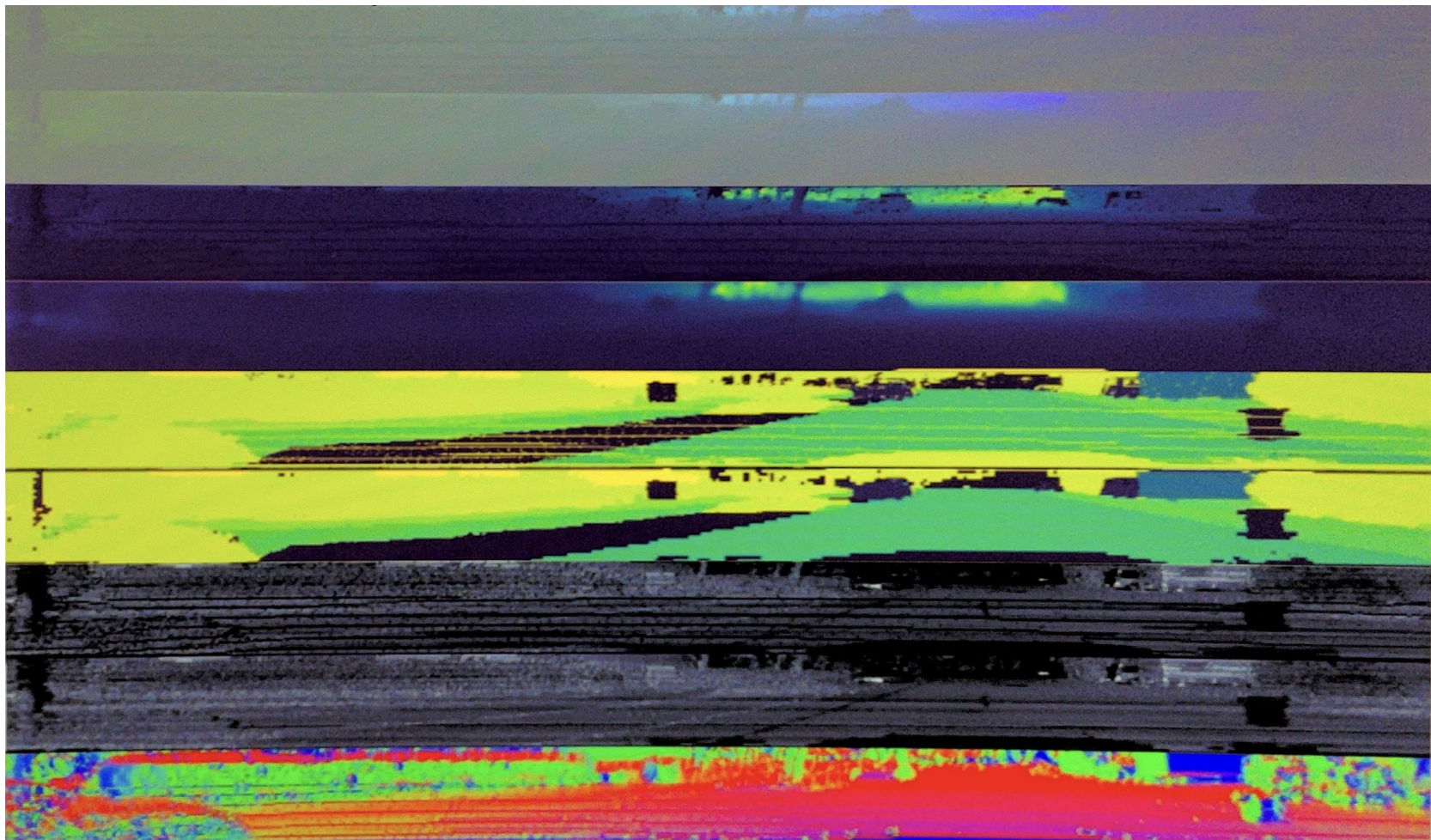
im_xyz

im_range

im_gt

im_remission

3D normal vector



- Sept 16 (Thursday):
 - Follow up with Alonso/Arash for “pulling docker from registry.kyber.team”
 - without waiting for docker for now
 - Retrain CenterPoint object detection baseline
 - Run domain adaptation baseline
 - From which to which datasets are we using for the baseline?
- Sept 14 (Friday):
 - Pull docker from Xingxin
 - Recognize the docker that would work with CenterPoint
 - Connecting with Eduardo for next step
 - Synchronize the code base (including docker)
 - Prepare nuScenes dataset for CenterPoint
 - Start training the baseline

End of September 17th, Weekly Report

Weekly Progress Report

Sept 20th - 24th, 2021

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Weekly Summary

- Reproduced CenterPoint Paper results on nuScenes (Training + validation for 20 epoch)
 - Plot the performance (mAP) over #epoch
- Compare functionalities of two repos (SemiDADet vs Original)
 - Original doesn't have tensorboard built-in (easy fix)
 - Original missing dataloaders for p40, ONCE, m2
 - should be able to integrate with SemiDADet's dataloaders (to be validated)
 - SemiDADet doesn't have detection visualization
- Studying the code for CenterPoint
- Shortened HYLDA demo video for ICRA submission
- **Recent Goals:**
 - For Huawei Datasets (finished copying to gx9)
 - Oracle with source & target
 - Naive with source → target

Work Logs

- Sept 20 (Monday):
 - Reproduce the CenterPoint 3D object detection benchmark on nuScenes.
 - Prepare nuScenes dataset for CenterPoint
 - start training (finished on Sunday 2pm)
 - Look into tensorboard support for CenterPoint → no native tensorboard available
 - Discuss the short-term goal with Eduardo
 - Get Huawei dataset
 - Oracle with source & target
 - Naive with source → target
 - Get dataset to gx9 (in progress)
 - P40, once, m2
 - TODO:
 - Check model performance and compare with their benchmark to make sure my code base is working fine.
 - Evaluate for checkpoint 14-20
 - Record in Excel
 - Run training with ONCE on nuScenes and compare with original

Work Logs

- Sept 21 (Tuesday):
 - Evaluate for checkpoint 1-14 (done, i.e. complete for 1-20)
 - Record in text
 - ~/repo/CenterPoint_ya_study/src/second/yA_TRAINING_OUTPUTS/nus_baseline_val_outputs
 - Look into visual.py and 3D boxes visualization on github issue
 - Generate bounding box for each epoch in validation (done)
 - ~/repo/CenterPoint_ya_study/src/second/work_dirs/nus_baseline_epoch_xx/example
 - Finished dataset copying
 - P40
 - M2
 - ONCE
 - Edit HYLDA demo video (shorten by half)
- ➡ - Sept 22 (Wed)
 - Develop an automated script that format the validation output
 - Organized the output in Excel
 - Plot mAP progression for each class for each epoch
 - Go through the pipeline and get familiar with the code

End of September 24th, Weekly Report