Master-Praktikum - Learning for self-driving cars and intelligent systems - Winter 2019/20
Weekly Report: Sensor Modality Fusion

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Accomplished tasks:

- Created augmented images for validation.
    - Augmentation types: add artificial snow, add defocus, add sun backlight, increase brightness, decrease brightness, add artificial rain, add shadow and so on
- Evaluation of augmented images and point cloud on the original AVOD network
    - The average precisions of 3D cars detection drop by around 6% in levels easy and moderate, drop by around 2% in level hard
- Retrained the AVOD network with random augmentations.
- Evaluation of augmented images and point cloud on the newly trained network.
    - Compared to the second point, the average precision of 3D cars detection increased by around 5%
- Started working on a Mixture of Experts methodology.
    - Added Mixture of Experts model to RPN model in AVOD and trained for 20000 iterations, but in the evaluation, average precision does not improve compared to the second point.

Tasks planned for next week:

- Continue to work on Mixture of Experts
- Evaluate if Mixture of Experts improves performance

Issues / Roadblocks:

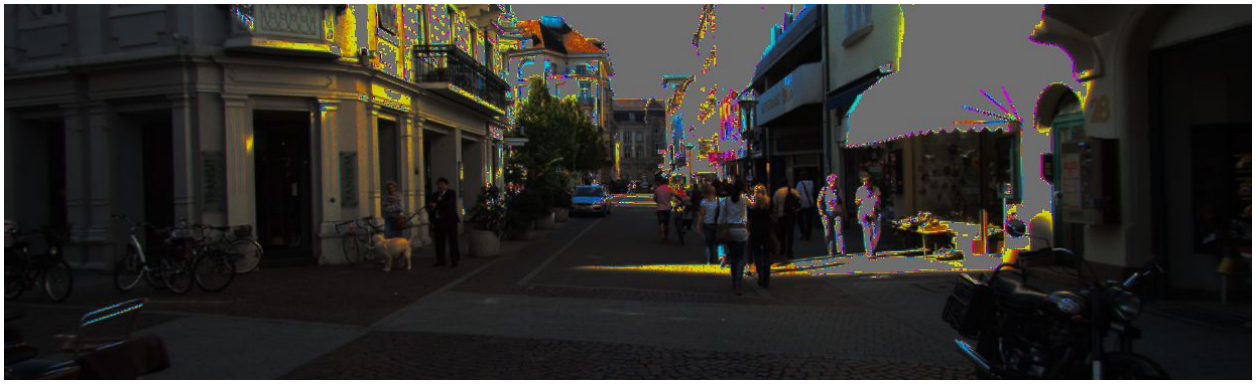
- Tensorflow and Cuda version compatibility issues. Could get it working with conda environment.

Some details of accomplished tasks:

- Some samples of augmented data

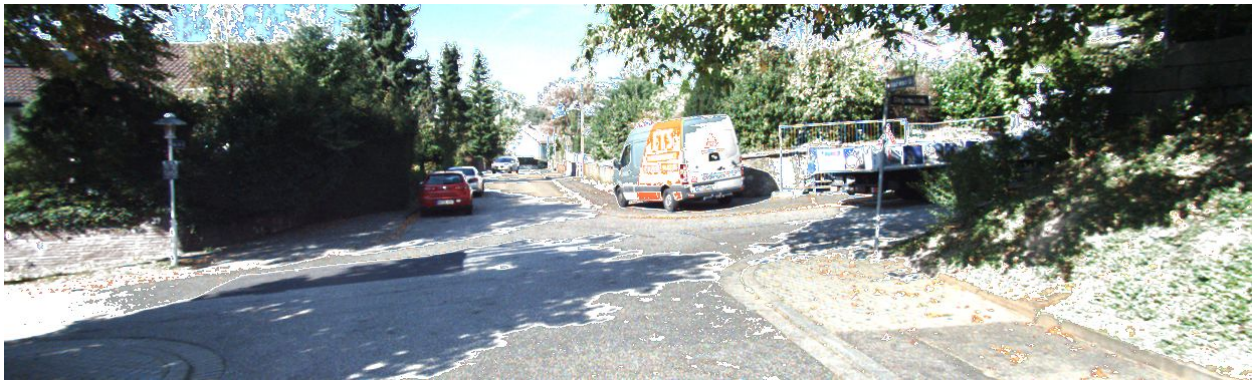
blurred

darken



Sun flare

snow



Rain