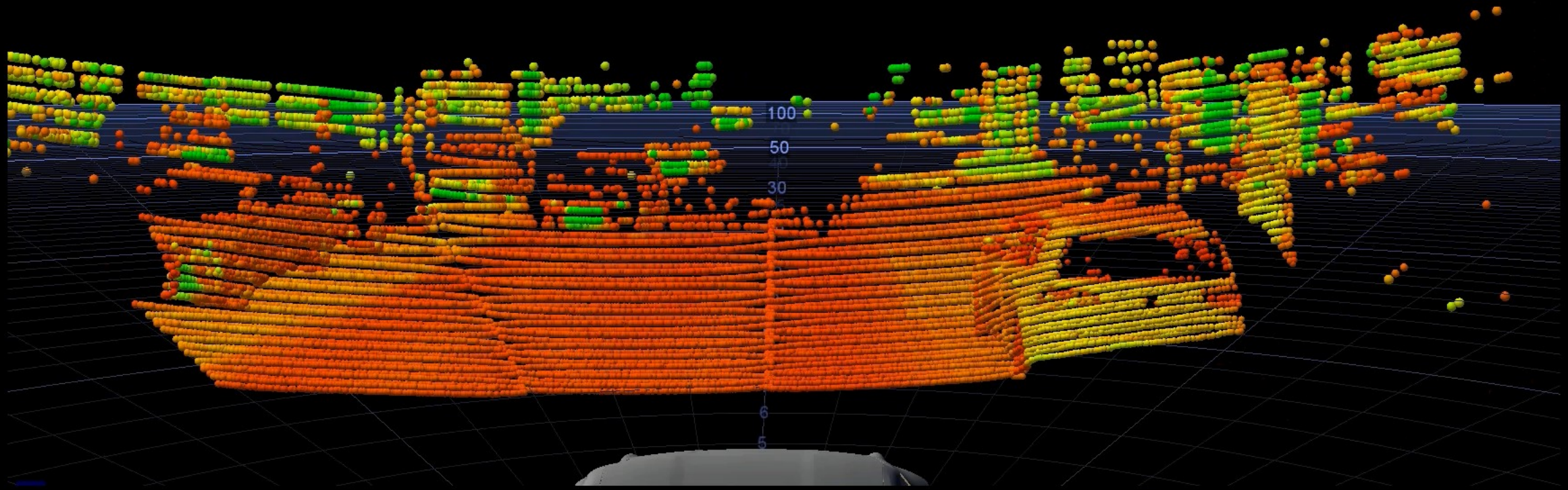
DataHack 2018 Challenge

Rigid Motion Detection

Sep 25, 2018

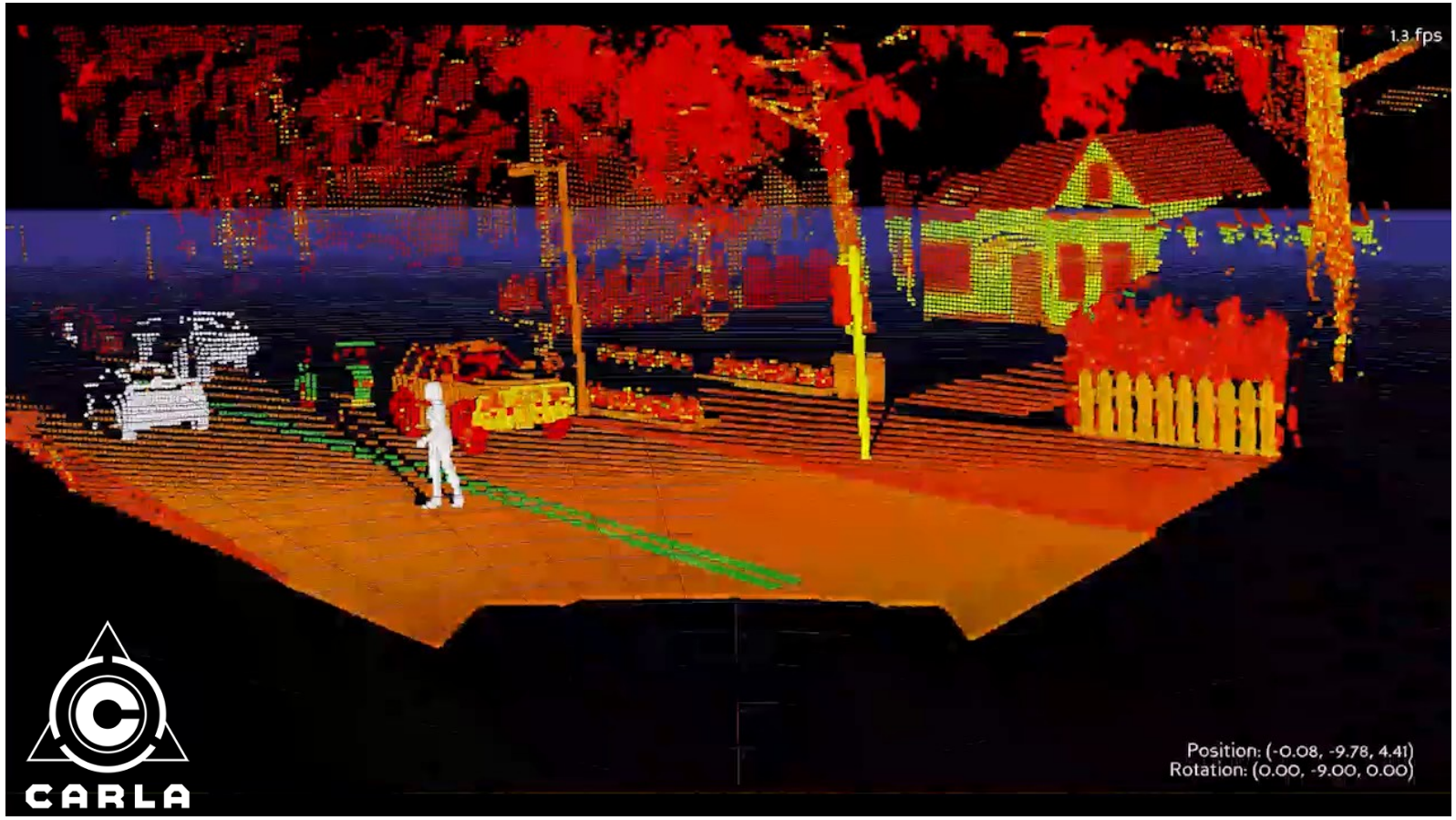
INNOVIZ TECHNOLOGIES


100
50
30
6
5


INNOVIZ
TECHNOLOGIES

The Challenge

Label all points that belong to moving objects (e.g. pedestrians, cars)

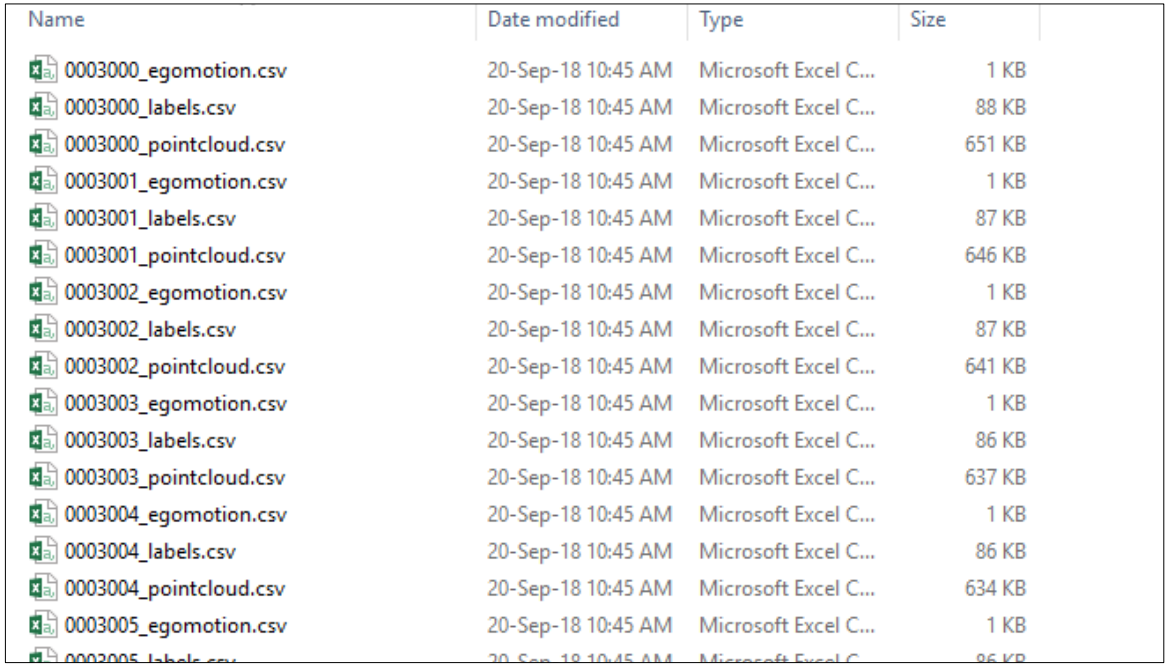


Dataset

Multiple videos of urban drive

Each frame consists of 3 files

1. Point cloud
2. Ego motion
3. Ground truth labels



Name	Date modified	Type	Size
0003000_egomotion.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	1 KB
0003000_labels.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	88 KB
0003000_pointcloud.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	651 KB
0003001_egomotion.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	1 KB
0003001_labels.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	87 KB
0003001_pointcloud.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	646 KB
0003002_egomotion.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	1 KB
0003002_labels.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	87 KB
0003002_pointcloud.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	641 KB
0003003_egomotion.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	1 KB
0003003_labels.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	86 KB
0003003_pointcloud.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	637 KB
0003004_egomotion.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	1 KB
0003004_labels.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	86 KB
0003004_pointcloud.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	634 KB
0003005_egomotion.csv	20-Sep-18 10:45 AM	Microsoft Excel C...	1 KB

What You Get

You don’t need to be a 3D/point cloud expert!

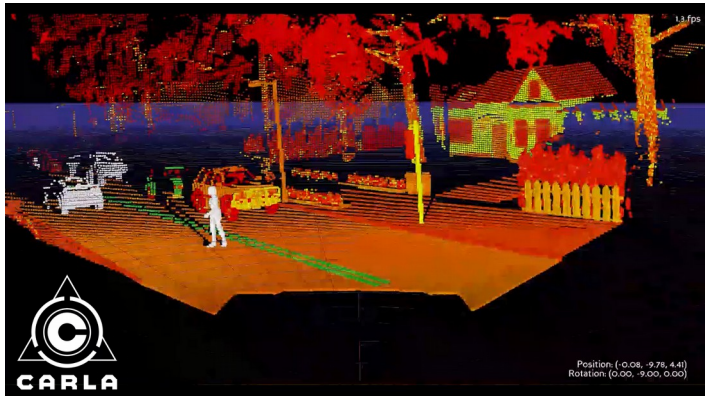
In our repo (python – all open source):

1. RotationTranslationData class
2. 3d point cloud viewer
3. Readers and code examples
4. Evaluation

https://github.com/InnovizTech/DataHack2018 coming soon…

What You Get

You don't need to be a 3D/point cloud expert!



In our repo (python – all open source):

1. RotationTranslationData class
2. 3d point cloud viewer
3. Readers and code examples
4. Evaluation

```python
from visualizations.vis import pcshow
import numpy as np
from infra import utils

if __name__ == '__main__':
    video_dir = 'video_dir'
    frame_indices = utils.extract_frame_indices(video_dir)
    for idx in frame_indices:
        pc_file_name = utils.frame_to_filename(video_dir, idx, 'pointcloud')
        pc = utils.read_data(video_dir, idx, 'pointcloud')
        label = utils.read_data(video_dir, idx, 'labels')
        labeled_pc = np.concatenate((pc, label), -1)
        pcshow(labeled_pc)
```

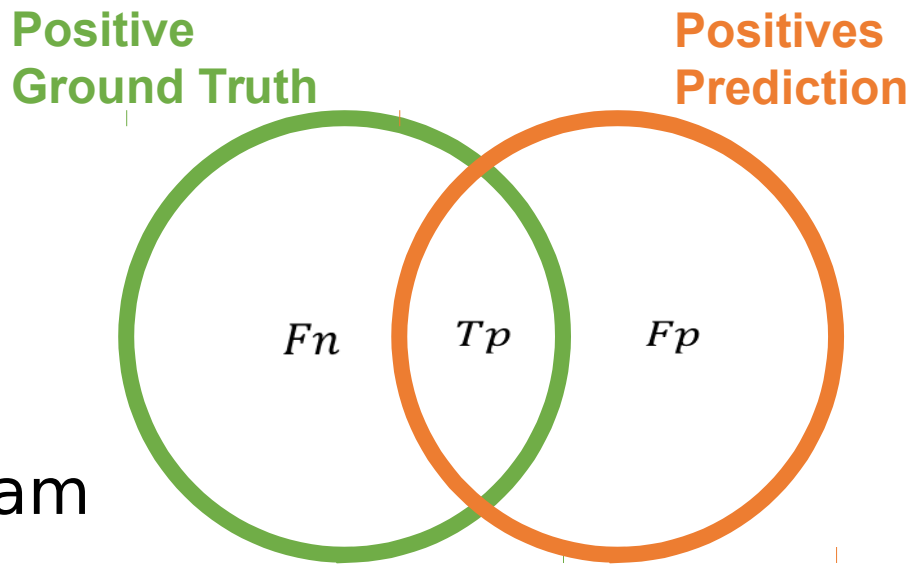
https://github.com/InnovizTech/DataHack2018 coming soon…

Evaluation

IOU based evaluation

80% of the test set includes ego-motion

Awards will be granted to best scoring team and team with the most creative solution.



$$IOU = \frac{intersection}{union} = \frac{Tp}{Tp + Fn + Fp}$$

THANK YOU.