

# INTRODUCTION

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This code is supplementary material to our BMVC 2021 Paper. This code provides demo to evaluate our detection results and run-times. Training is NOT supported. Also, due to file size limitation of the conference, we only provide the pre-trained weights for our geometry-only model. Some code are adopted from the open source code of VoteNet.

## Requirments

This code is tested in Ubuntu 18.04 LTS. You need CUDA-Toolkit 10.2 to compile the CUDA extensions. Also, following python packages are needed:

```
pytorch=1.5      # other versions might have issues with our CUDA extensions
open3d=0.8.0     # other versions have issues with our 3D visualisation
pybind11         # for binding C++ extensions
torchvision
opencv
matplotlib
numpy
argparse
```

## Compile Extensions

Use the shell script `build.sh` to compile all extensions we use. If you want to test our code with Nvidia Jetson Xavier NX, use `build_arm.sh` instead. You would probably see a lot of warnings. It's fine.

## Run Demostration

Use the following command to run the demo and visualize the 3D bounding boxes. Press ESC to close pop out windows.

```
python demo.py --vis3d
```

To view 2D results, try:

```
python demo.py --vis2d
```

To test the model speed, use:

```
python demo.py --benckmark
```

Due to the limited amount of images, the inference speed might be slightly different to our reported values in main paper. Also, the pre-processing time might be faster than in the supplementary document, as multi-threading is enabled in this code.