leodrive.ai

ML Occupancy prediction progress report

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Content

- BEVDet4d to TesorRT
- BEVStereo
- Road map

BEVDet4d in BEVDet

BEVDet

base model use only

one frame

BEVDet4D

use temporal data (bev features from several frames with alignment)

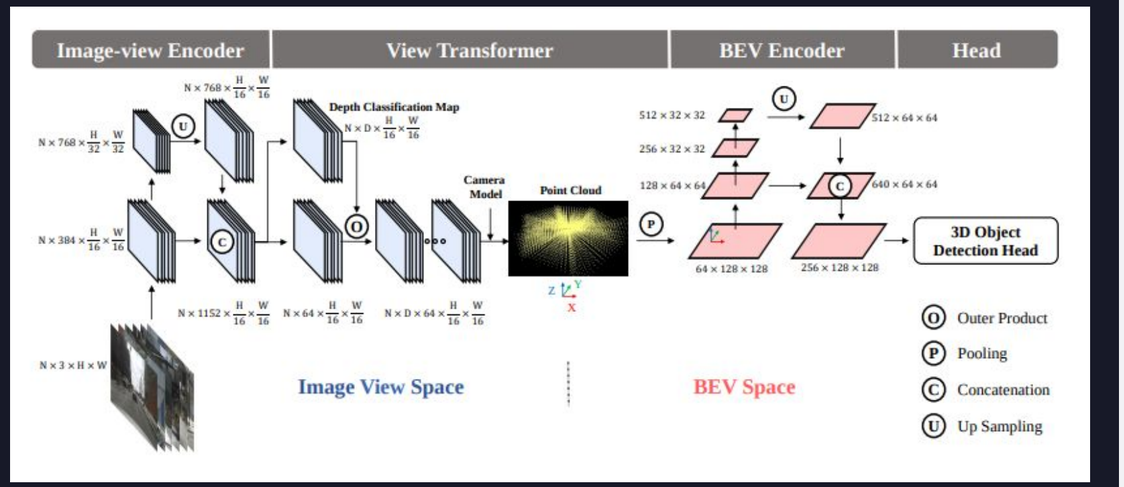
BEVDet4DStereo

use temporal stereo for enhance mono depth estimation

BEVDet4DStereoOCC

introduce OOC head

BEVDet4d to TesorRT



TensorRT convertion

- https://github.com/lexavtanke/BEVDet
- gpu memory consumption 2658 Mb
- 76 fps
- 13 ms per frame
- Tested on RTX 3080 Mobile

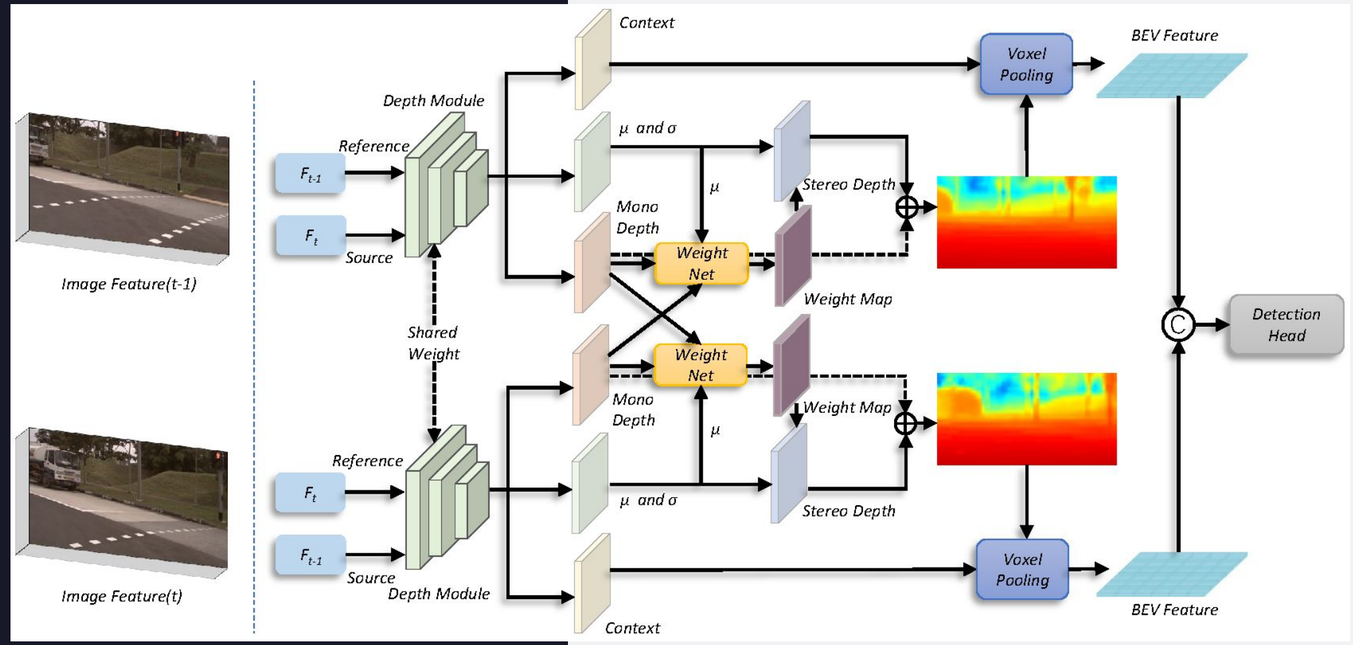
bevdet-4d-r50-cbgs with tensorRT

```
fps: 76.58 img / s
inference time: 13.06 ms
```

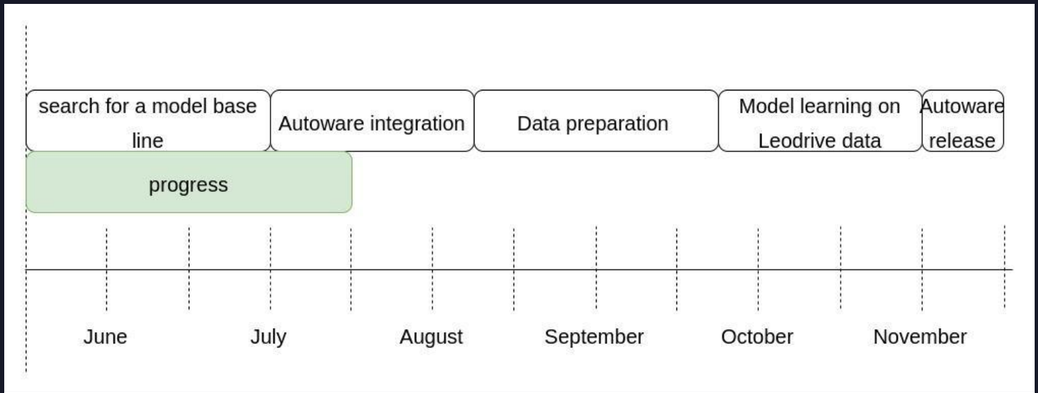
BEVStereo

BEVStereo convertion

- https://github.com/Megvii-BaseDetection/BEVStereo
- https://arxiv.org/pdf/2209.10248.pdf
- Temporal stereo method
- Used in BEVDet to enhance mono depth estimation



Road map



- Search for a model base line
  - BEVDet as base line
    - prove performance results
    - check TensorRT conversion
    - test learning pipeline with Occ3D
  - other architecture
    - BEVfusion (multi modal) with OCC head
- Autoware integration
  - **Convert model to TensorRT**
  - ROS2 node
  - test on Nuscense converted to ROSBAG
  - tests on vehicle
- Data preparation
  - Annotation tool (bbox and lidar segmentation)
  - GT preparation pipeline based on SurroundOcc
  - Data collection
  - Data annotation
- Model learning on Leodrive data
- Autoware release
  - deploy model learned on Leodrive data
  - tests on vehicle
  - make PR

Q & A

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