DeepDrive

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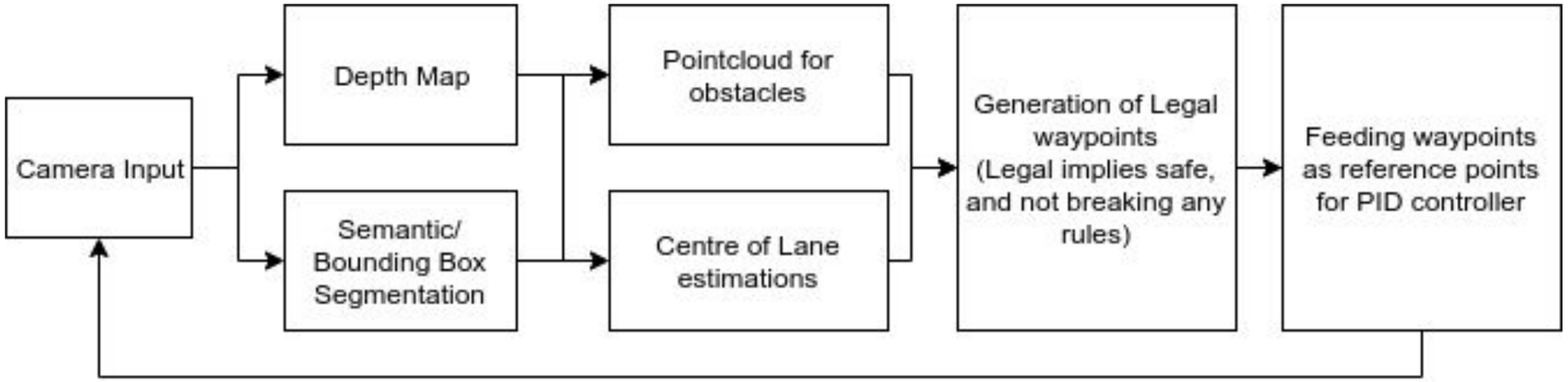
The objective of the project is to create an Advanced driver-assistance system(ADAS) that would run on the open-source simulator CARLA, which closely models real-life driving conditions with diverse maps, weather conditions and traffic scenarios.



Object detection

Our Approach:

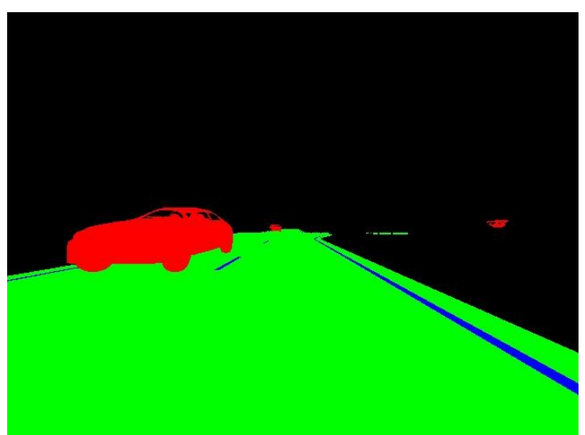
- Camera input from 4 monocular cameras is taken
- Semantic Segmentation and Depth estimation is performed
- Relative position of the centre of obstacles is calculated
- A potential legal trajectory is generated
- Points from this trajectory are sampled, to be used as reference for PID Controller
- The controller sends throttle and steering signals to the actuator

Implementation Details:

- YOLO for detecting obstacles
- DeepLab for road and lane segmentation

Future Plans:

- Optimizing global navigation
- Improving stability of Local waypoint creation
- Generation and testing on adversarial scenarios
- Improving perception algorithms


Semantic segmentation


Depth map

Traffic light detection