VAYAVISION

SME- 847630 “See the View Project” (STV)

Project co-funded by the Horizon 2020 program of the European Union

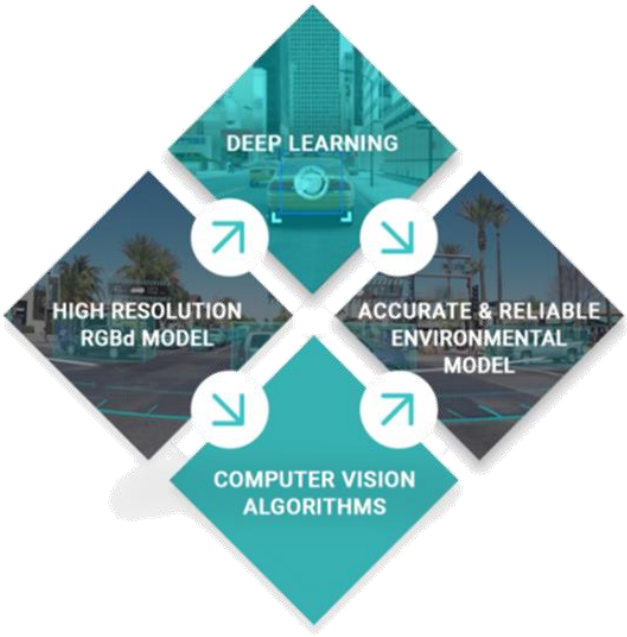
RAW DATA, FUSED TO PERCEPTION

VAYAVISION brings autonomous vehicle perception to new heights. Our AI and computer vision algorithms fuse raw data from RADAR, LiDAR and camera, building the most accurate 3D environmental model

Providing the most accurate Environmental Model

Deep learning and computer vision algorithms are applied to the upsampled high-resolution colored 3D model (RGBd), resulting in remarkably accurate and reliable detection and classification.

All information pertaining to the size, shape and velocity of every surrounding object, including small obstacles, can be viewed and analyzed.



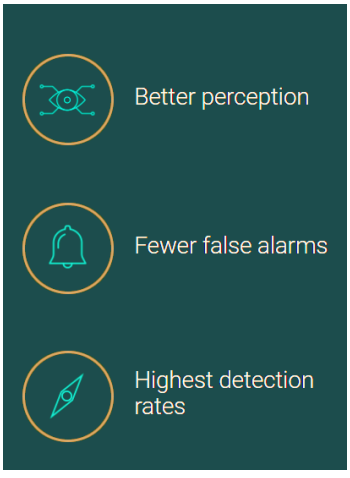
Deep Tech Raw Data Fusion with Upsampling

Lidar, Radar and camera are perfectly calibrated and synchronized to receive exact pixel-level matching. Sparse low-resolution data samples from the lidar and radar images are upsampled to HD quality, enabling to assign depth and speed information to every pixel resulting in HD RGBd model.

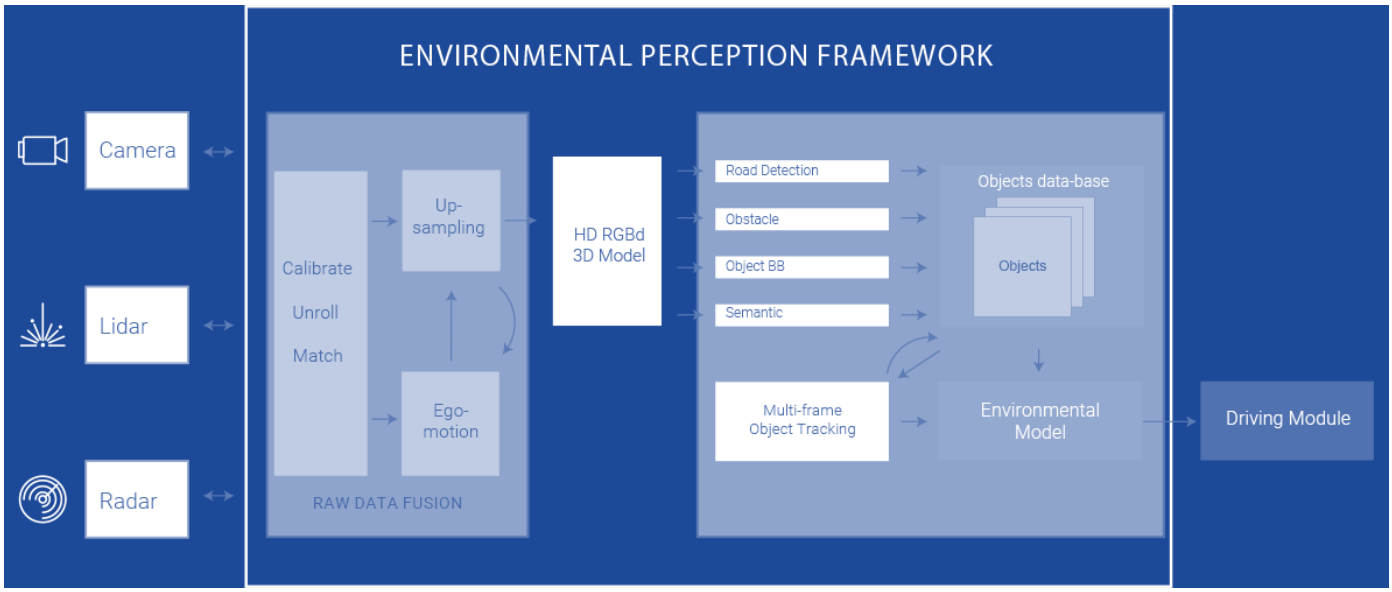
Detection of small objects absent in training sets

Depth data assigned to every pixel in camera picture

Accurate shape definition of vehicles, humans, and any other object



Product Architecture and Block Diagram



Interface to Sensors

The framework includes interfaces to the various sensors, including cameras, LiDARs and RADARs. It also interfaces to other sensors such as IMUs, GNSS, CAN Bus/OBD2 and vehicle telemetry data.

Raw Data Fusion Sub-Module

Calibration, unrolling, and matching module receives raw sensor data before synchronizing and fusing it into a unified 3D model. Upsampling increases the effective resolution of the distance sensors, resulting in a dense RGBd model with each pixel containing both color and depth information. Localization and motion tracking help to determine the self-position and velocity

Object Detection Sub-Module

Frame-based object detection and segmentation of the road includes obstacles, vehicles, pedestrians, bicycles, motorcycles, lane borders, available free space, and more.
Detection by classification is performed with DNN-based algorithms that require training. In parallel, detection without classification is performed by another set of algorithms, thus, enabling detection of unexpected obstacles. Multi-frame object tracking includes 3D modeling, motion tracking and sizing of each object.

Environmental Model API

The resulting environmental model data is accessed via our software API and includes an occupancy grid and list of parameters for any tracked objects: Localization, Orientation, Motion Vector and More.

About Us:

Committed to the safest autonomous driving standards, VAYAVISION delivers best-in-class perception solution to leading OEMs and Tier 1s. The company is headquartered in the outskirts of Tel-Aviv with funding from leading global investors. It employs more than 30 enthusiastic engineers and developers with expertise varying from AI and Computer Vision to Deep Learning and Systems Engineering.

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