KI ABSICHERUNG

Safe AI for Automated Driving

11th March 2021, Online, Interim Presentation

AI-based Functions for Pedestrian Detection

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AI-based Functions for Pedestrian Detection
Mission & Vision

Development Environment
AP 1.1

- Facilitate collaboration on code-level among TPs and project partners.
- Provide and maintain development tools.
- Make licenses in third-party code transparent.

Algorithm Development
AP 1.3 – 1.5

- Provide state-of-art algorithms for pedestrian detection.
- Train and test algorithms on synthetic data generated in the project.
- Evaluate algorithms using performance- and safety-related metrics.

Requirements Specification
AP 1.2

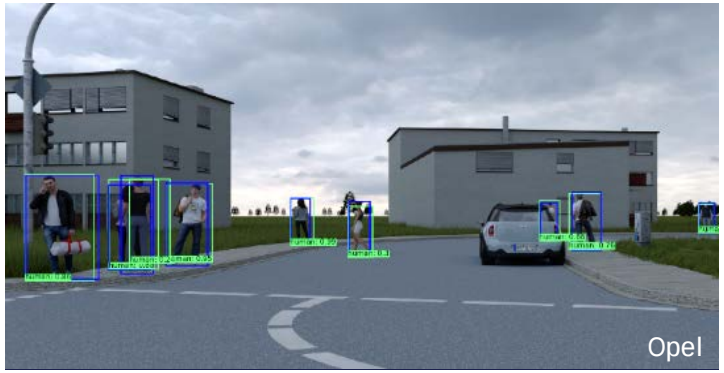
- Specify boundary conditions for the operation of AI-based pedestrian detection.
- Specify performance metrics and target values.
- Specify requirements on training and test data.

AI-based Functions for Pedestrian Detection Algorithms

TP1 provides state-of-art deep neural networks for pedestrian detection.

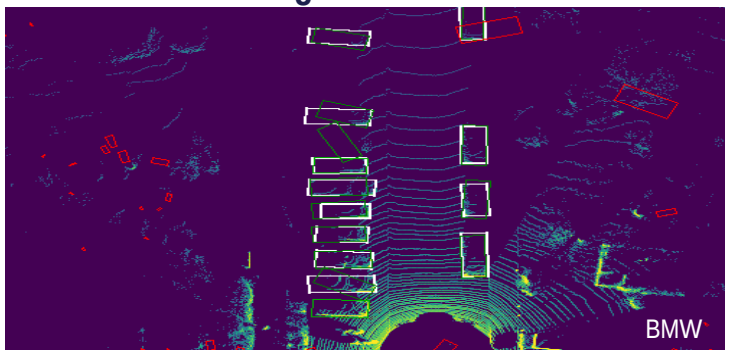
Semantic Segmentation

2D-Bounding Box Detection

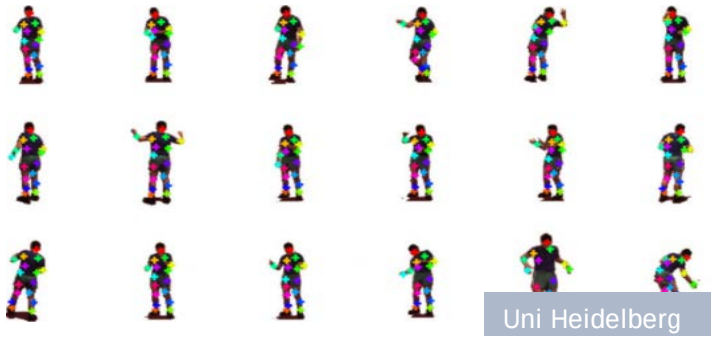


Instance Segmentation

3D-Bounding Box Detection



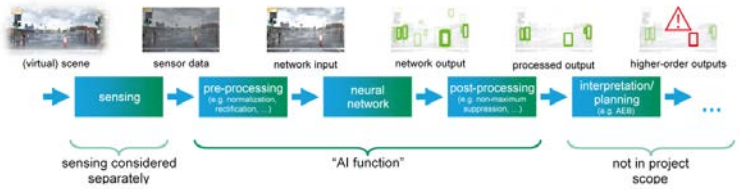
3D-Body Pose Estimation



AI-based Functions for Pedestrian Detection Requirements Specification

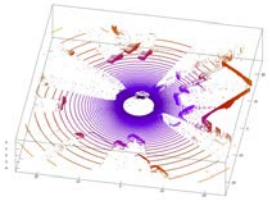
TP1 specifies expectations on its inputs and targets for its outputs.

AI function specification



Sensor specifications

Parameter	Value	Comr
Camera Model	pinhole (no lens distortion)	Could radially
Field of View	60° × 42°	These croppin pixels to th
Pixel Resolution	1920 × 1280 (5.1 MP)	
Aspect Ratio	1.5:1	



Annotation format specification

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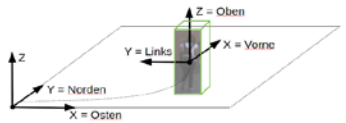

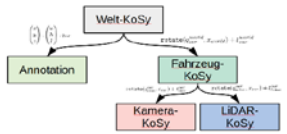

Metric collection

AI-based Functions for Pedestrian Detection
Intermediate Key Learnings

Getting research and safe product development objectives under one roof can be challenging.

Anticipating expected performance of an algorithm that is under development is almost impossible.

Specifying how to generate synthetic data with a realistic degree of variation is non-intuitive.

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KI Absicherung ist ein Projekt der KI Familie und wurde aus der VDA Leitinitiative autonomes und vernetztes Fahren heraus entwickelt.

KI FAMILIE

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