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Sensor data fusion for automated driving
Toward robust perception in adverse weather conditions

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Propositions

accompanying the dissertation

SENSOR DATA FUSION FOR AUTOMATED DRIVING
TOWARD ROBUST PERCEPTION IN ADVERSE WEATHER CONDITIONS

by

Joris Ferdinandus Maria DOMHOF

1. To create a robust environmental perception system and to avoid a common mode of failure, an intelligent vehicle requires at least two sensing modalities. (this thesis)

2. To monitor the detection probability of each sensor, at least two sensors that fully observe the object's state with an overlapping field of view are required. (this thesis)

3. A calibration target design that facilitates accurate detections for all sensing modalities allows for joint extrinsic calibration and thereby reduces the number of different calibration targets and calibration procedures required. (this thesis)

4. To calibrate sensors with respect to the robot's body, an external sensor and a set of 3D points on the robot's exterior are required. (this thesis)

5. Academia lacks the resources for large scale recording of datasets with rare events (e.g. adverse weather and illumination conditions), therefore automotive industry should be more forthcoming in sharing datasets.

6. High quality paper reviews contribute to the quality of research, therefore reviewers should be acknowledged for their work by making public who reviewed the work.

7. Academic life is competitive, demanding and solitary, therefore the academic environment should facilitate more psychological support in the form of easy and free access to a psychologist.

8. The skill of making and accepting compromises is an essential skill in life and work.

9. Do not perform darkness recordings in summer, unless you are a night owl.

10. Problem solving is just like skiing: don't hesitate, you have to go down anyway, with the right techniques.

These propositions are regarded as opposable and defendable, and have been approved as such by the promotor prof. dr. D.M. Gavrila.