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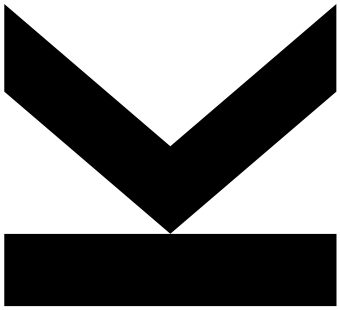
ROBUST DRIVE-BY ROAD SIDE PARKING DETECTION ON MULTI-LANE STREETS USING AN OPTICAL DISTANCE SENSOR



Thesis Outline

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1 Initial Situation and Motivation

Currently the road side parking situation in most cities is rather untransparent. Except from parking garages and the like information about the availability of parking spaces is rarely available. However, such information can help to reduce traffic by a tremendous amount. Studies have shown that in urban areas about 30% of traffic congestion is created by drivers looking for free parking spaces [2] and that in 2007 a loss of about $78 billion U.S. dollars was created by the use of about 2.9 billion gallons of gasoline alone in the USA [1]. Furthermore, about 4.9 billion hours were wasted by drivers while looking for parking spaces during that year.

2 Problem Definition

Detection of road side parking spaces and their states is a challenging task. Of course an obvious solution to the problem would be to put sensors to every parking space in the city, which check, if the corresponding parking space is occupied or vacant. This, however, has the drawback to be very expensive as, for big cities, millions of sensors would have to be bought, installed and maintained. Furthermore, because the parking situation does not change often, the high frequency of sensing with such a system would be rather inefficient.

3 Goals and Detailed Approach

goals...

4 Milestones

Table 1 shows the planned milestones of this project.

Date	*Milestone*
07.04.2017	Hardware is available
28.04.2017	Hardware parts work together and sensor data can be retrieved.
	Tests regarding the accuracy and range of the optical distance sensor are taken.
12.05.2017	The sensors are mounted on the car.
19.05.2017	Test data has been collected on a single lane road.
31.06.2017	Single lange parking detection is implemented and has been evaluated.
15.07.2016	Test data has been collected on multi lane roads in different scenarios.
01.09.2016	Lane detection algorithm has been implemented and evaluated.
31.10.2017	Parking detection on multi lane road has been implemented and evaluated
01.12.2017	Submission of the thesis

Table 1: Milestones

References

[1] Texas Transportation Institute. Urban mobility report. 2007.

[2] Sarfraz Nawaz, Christos Efstratiou, and Cecilia Mascolo. Parksense: A smartphone based sensing system for on-street parking. In *Proceedings of the 19th Annual International Conference on Mobile Computing & Networking*, MobiCom '13, pages 75–86, New York, NY, USA, 2013. ACM.