HEINZ NIXDORF INSTITUT
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Wireless Protection of Vulnerable Road Users

Seminar Thesis in Computer Science Master

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Wireless Protection of Vulnerable Road Users

Seminar Thesis in Computer Science Master

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(Philip Frerk)
Paderborn, 26. Dezember 2017

Abstract

about 1/2 page:

1. Motivation (Why do we care?)
2. Problem statement (What problem are we trying to solve?)
3. Approach (How did we go about it)
4. Results (What's the answer?)
5. Conclusion (What are the implications of the answer?)

Protecting vulnerable road users is a very important task as in roughly 50 % of all traffic accidents vulnerable road users are involved. Vulnerable road users are pedestrians or drivers of two-wheeled vehicles.

A technology is needed that warns both the vulnerable road user and the car driver if an accident between them is likely to happen. This is not an easy challenge because the warnings have to be sent in time and also it has to ensured that no people are warned who are not really affected by the approaching car.

To achieve that goal, wireless networks, GPS and sensor perception will be used.

Results show that the number of accidents with vulnerable road users involved can be reduced dramatically.

Therefore, much more work will be put into this topic, because it is already shown that the technologies can potentially prevent many traffic accidents.

Kurzfassung

Gleicher Text (sinngemäß, nicht wörtlich) in Deutsch

Contents

The table of contents should fit on one page. When in doubt, adjust the `tocdepth` counter.

Chapter 1

Introduction

umstrukturieren, vielleicht doch keine sektionen!

1.1 Motivation

Within the last century the usage of motorized vehicles has grown rapidly. While this fact brings the great benefit of full mobility, it does not come without its downsides. One of them is the high number of traffic accidents. According to **v2pcomm** in roughly half of all traffic accidents, Vulnerable Road Users (VUs) are involved. Hence, there is huge potential to prevent injuries or even deaths of many people. This thesis will give you an overview of the current state of research in this area. While there are many approaches beyond the discipline of Wireless Networking (e.g. Computer Vision for pedestrian recognition), this thesis will focus mainly on how to prevent traffic accidents by using wireless network technology. However, the other areas will also be explained briefly since they often work hand in hand with Wireless Networking.

1.2 Structure of the Thesis

The thesis is structured as follows. First, in chapter 2 we will look at so called Vehicle to Pedestrian Communication Systemss (V2PCs) which use wireless networks in order for pedestrian and vehicles to communicate so that accidents between them can be prevented.

Second, in chapter 3 we will look at detecting VUs by using perception of cars. We will only shortly dive into this topic, because it is not directly connected to Wireless Networking. Nevertheless, it is necessary to know the basics in order to understand chapter 4.

There, a combination of V2PCs and perception will be used to improve the protection of VUs.

Finally, in chapter 5 all the approaches will be summarized and also we will see what future tasks are still left in this area to make it suable in the real world.

Chapter 2

V2P Communication Systems

Chapter 3

Detecting Pedestrians by using Perception

Hier kommt nur ein kleiner Ausblick hin, da es nicht direkt etwas mit Wireless Networking zu tun hat

Chapter 4

Fusion of Perception and V2P Communication

Chapter 5

Conclusion

- summarize again what your paper did, but now emphasize more the results, and comparisons
- write conclusions that can be drawn from the results found and the discussion presented in the paper
- future work (be very brief, explain what, but not much how, do not speculate about results or impact)
- recommended length: one page.

List of Abbreviations

V2PC	Vehicle to Pedestrian Communication Systems
VU	Vulnerable Road User

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