



*In Prague, 11.6.2015*

## ***Review of a master's (diploma) thesis***

**Author of the thesis:** Bc. Aleš Ječmen

**Topic of the thesis:** MONITOROVÁNÍ DOPRAVNÍHO PROUDU PLOVOUCÍMI VOZIDLY

**Oponent:** Doc. Ing. Ondřej Příbyl, Ph.D. (K611)

### **Formal aspects**

This thesis was written in English language. The language quality was high; the statements were clearly formulated and easy to understand.

The structure of the thesis is in general good.

There are however some small limitations. The chapter 2.8 is basically built on a single reference (Michek, 2013). This reference is not cited properly, and cannot be identified and viewed (no web site, no link). I would strongly recommend using additionally other references accepted in this field abroad (Garcia et al. "Data preprocessing in data mining" (2014); Pyle. "Data Preparation for Data Mining" (1999), or many others). Using this single local reference lead to several simplifications in this thesis, such as the two data reduction approaches discussed on page 22. There exist definitely different approaches to data reduction, such as reduction of dimensionality, data compression, hierarchical aggregation, compression and others. I would recommend use wider range of references in this regard, especially since this is meant to be clearly one of the most important contributions of this thesis.

In general, this thesis is written really thoroughly. There are however some small copy-paste errors and other formal aspects. For example, in several places, a "paper" is mentioned, even though there should be "thesis" instead. In the conclusion a paragraph starts "This chapter focuses on some of the ITS approaches...". This does certainly not belong here. More thorough review especially of the introduction and conclusions sections would be useful.

### **Meeting of the objectives**

This thesis states the following major objectives:

- to analyse the contemporary use and technology of Floating Car Data (FCD),
- to provide an overview of intelligent transportation systems (ITS) using this technology,
- to process FCD from taxi vehicles in Vienna and use them to support traffic engineers in identifying traffic congestion,
- to describe the future of mobility as well as the development of ITS.

---

***Doc. Ing. Ondřej Příbyl, Ph.D.***  
*Na Florenci 25, Praha 1, 110 00*  
e-mail: [pribylo@fd.cvut.cz](mailto:pribylo@fd.cvut.cz)  
tel.: (+420) 224 890 712  
mobil: (+420) 731 125 297

# České vysoké učení technické v Praze FAKULTA DOPRAVNÍ

Ústav Aplikované Matematiky K611



This is very ambitious. In my opinion, these topics are too heterogeneous to be put into one thesis. I would recommend focusing on just two of these topics.

Significant part of this thesis however is dealing with overview of existing approaches and summarizing the known facts. It is done very well, and it certainly belongs to a master's thesis. It should however not be the core of it. More individual work would be expected here.

I believe, a lot of work had been done on the data analysis part. Unfortunately, it is not demonstrated properly in the text. More focus and better structuring shall be invested into the chapter 4.

Big part of the section "Conclusions" summarises findings from the field and only limited space is dedicated to real findings of the thesis.

Since data preprocessing is the major aim of this paper, I would appreciate finding clear methodology how to do it (which steps and which settings) in case of FCD. There is a theoretical introduction and a long chapter dealing practically with some of the issues. Clear overview (figure/table) linking the theoretical steps to the real analysis performed (including particular methods and their settings) would be very useful and improving the overall impact of this thesis. This could be a straightforward recommendation for researchers going to do similar analysis in the future.

## Summary

I consider this thesis to fulfil all formal as well as factual requirements on a master's thesis. The topic is important and valid. A lot of work must have been invested in the analysis. It is a pity it was not better demonstrated in the thesis.

This thesis is fully compliant with the requirements. The issues mentioned in this review are rather minor and I recommend the overall mark as follows.

**Recommended overall mark for this thesis: B (very good)**

Best Regards,

Doc. Ing. Ondřej Příbyl, Ph.D.

## Questions for the author:

1. Did you use any mapping of the GPS coordinates to the map background? In Figure 4.24, we can see data points on the "top of a church". This is certainly not a preferable behaviour and is caused by the imprecision of the mapping. There are certainly several ways to overcome this, for example by tracking trajectory and not displaying single records. Have you done anything in this direction or do you take it into consideration in any other way?
2. What is the impact of these findings on your future work/study and what is its impact on the projects mentioned in your thesis such as ITS Vienna Region or RODOS? Are they going to be used in any way?

---

**Doc. Ing. Ondřej Příbyl, Ph.D.**  
Na Florenci 25, Praha 1, 110 00  
e-mail: [pribylo@fd.cvut.cz](mailto:pribylo@fd.cvut.cz)  
tel.: (+420) 224 890 712  
mobil: (+420) 731 125 297