

Fault Tolerance in Computational Systems - Report

Influence of outliers in a railway remote monitoring system

Student: Vítor A. Morais
Supervisor: António Pina Martins

March 13, 2017

Contents

1	Introduction	3
1.1	Context and motivation	3
1.2	Document structure	3
2	Railways Remote Monitoring Systems	4
2.1	Smart Meters	4
2.2	Synthesis	4
3	Outliers Detection	5
3.1	Outliers detection definition	5
3.2	Synthesis	5
4	Future Research	6
4.1	Outliers detection definition	6
4.2	Synthesis	6
5	Conclusion	7

Symbols

kbps	Kilobit per second (often used kbit/s or kb/s) - bit rate
Mbps	Megabit per second (often used Mbit/s or Mb/s) - bit rate
Gbps	Gigabit per second (often used Gbit/s or Gb/s) - bit rate
dB	Decibel - Gain/Attenuation
kHz	Kilohertz - Frequency
MHz	Megahertz - Frequency
GHz	Gigahertz - Frequency
km	Kilometer - Distance
min	Minute - Time

Chapter 1

Introduction

This chapter presents the context, motivation and document structure of a study of outlier detection in a railways WSN-based smart grid.

1.1 Context and motivation

Smart grids are conceived as electric grids that deliver electricity from generation points to consumers, having the feature of controlling the entire process.

In railways...

Outliers are bla bla,,.

The study of outliers is relevant due to it's influence in

With this work it is expected to raise the awareness of outliers detection in the phd study

1.2 Document structure

This document is divided in 4 chapters, each of them incorporate the relevant subsections to present the subjects mentioned

Table 1.1: Document structure

Chapter	Title
1	Introduction
2	Railways Remote Monitoring Systems
3	Outliers Detection
4	Future Research
5	Conclusions

Chapter 2

Railways Remote Monitoring Systems

In this chapter it is an overview of the railway system where the outliers detection is expected to be studied.

2.1 Smart Meters

2.2 Synthesis

Chapter 3

Outliers Detection

In this chapter it is made the study of the state of the art of outliers and it's relevance in railways.

3.1 Outliers detection definition

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

3.2 Synthesis

Chapter 4

Future Research

In this chapter there are presented the future steps in research on outliers detection on railways WSN-based smart grid.

4.1 Outliers detection definition

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

4.2 Synthesis

Chapter 5

Conclusion

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.