

Corrections for submitted thesis version

Miguel Xochicale

April 7, 2019

Abstract

This document presents a log-book for the corrections of the submitted version. Minor corrections are mainly for the improvement of the use of English language and typos. Major corrections include further clarification of ambiguous statements.

Contents

| | | |
|----------|----------------------------------|-----------|
| 1 | Abstract | 3 |
| 1.1 | Minor corrections | 3 |
| 1.2 | Major corrections | 3 |
| 2 | Acknowledgements | 3 |
| 2.1 | Minor corrections | 3 |
| 3 | Chapter 1 | 3 |
| 3.1 | CH1: Minor corrections | 3 |
| 3.2 | CH1: Major corrections | 5 |
| 4 | Chapter 2 | 6 |
| 4.1 | CH2: Minor corrections | 6 |
| 4.2 | CH2: Major corrections | 7 |
| 5 | Chapter 3 | 9 |
| 5.1 | CH3: Minor corrections | 9 |
| 5.2 | CH3: Major corrections | 13 |
| 6 | Chapter 4 | 14 |
| 6.1 | CH4: Minor corrections | 14 |
| 6.2 | CH4: Major corrections | 16 |
| 7 | Chapter 5 | 16 |
| 7.1 | CH5: Minor corrections | 16 |
| 7.2 | CH5: Major corrections | 20 |

| | | |
|-----------|-----------------------------|-----------|
| 8 | Chapter 6 | 21 |
| 8.1 | Minor corrections | 21 |
| 8.2 | Major corrections | 23 |
| 9 | Chapter 7 | 24 |
| 9.1 | Minor corrections | 24 |
| 9.2 | Major corrections | 27 |
| 10 | APPENDIX | 27 |
| 10.1 | Minor corrections | 27 |
| 10.2 | Major corrections | 27 |

1 Abstract

1.1 Minor corrections

1. $\neg \wedge$ (pp. iii) cross-out: smapling rate changes or noisiness

SORTED:

1.2 Major corrections

1. \otimes_1 (pp. iii) the use of 'no scientific work has been reported' sounds a bit pretentious, i guess it might be better to say the contributions of the thesis are: 1,2,3. which, in a way, allow readers to state the controraty

SORTED:

2 Acknowledgements

2.1 Minor corrections

1. $\neg \wedge$ (pp. vii) confereces TO conferences

SORTED:

3 Chapter 1

3.1 CH1: Minor corrections

1. (pp. 2) $\neg \wedge$ or sensors with different

SORTED:

2. (pp. 7) $\neg \wedge$ differentiate

SORTED:

3. (pp. 12) $\neg \wedge$ activities

SORTED:

4. (pp. 12) $\neg \wedge$.For

SORTED:

5. (pp. 13) $\neg \wedge$ replace 'e.g.' to 'i.e.'

SORTED:

6. (pp. 14) $\neg \wedge$, and

SORTED:

7. (pp. 15) $\neg \wedge$ weaknesses

SORTED:

8. (pp. 15) $\neg \wedge$ (i.e.

SORTED:

9. (pp. 16) $\neg \wedge$ use the right reference citation format for the wikipedia link

SORTED:

10. (pp. 17) $\neg \wedge$ uploaded in ... future

SORTED:

11. (pp. 17) $\neg \wedge$ Scientific Reports

SORTED:

3.2 CH1: Major corrections

1. (pp. 2) \otimes_1 What is that accuracy and precision that Frank et al., 2010 talk about? Apparently, these accuracy and precision is about the classification activities and little about the charactersitics of sensors

SORTED:

2. (pp. 9) \otimes_1 Stating that work has been made in MV in HHI for the last six years citing 5 works is somewhat shallow! Probably more literature review would help to give better understanding of MVinHHI

SORTED:

3. (pp. 13) \otimes_1 underlined text is out of the scope of the phd thesis. reconsider to rewrite the undeline part or delete it.

SORTED:

4 Chapter 2

4.1 CH2: Minor corrections

1. (pp. 21) \neg deterministic

SORTED:

2. (pp. 22) \neg replace ‘.’ with ‘. and ’

SORTED:

3. (pp. 23) \neg replace ‘us’ with ‘me’

SORTED:

4. (pp. 25) \neg replace ‘analysing’ with ‘the analyses of’ Also, rewrite the sentence to explain better the use of Detrended Fluctuation Analyses (Peng et al. 1995). For instance: ‘ Therefore, considering the previous weaknesses of ApEn, SampEn and MSE, Peng et al., 1995 propose Deterended Fluctuation Analyses which is based on ... ‘

SORTED:

5. (pp. 26) \neg replace ‘e.g.’ with ‘i.e.’

SORTED:

6. (pp. 28) \neg add: ‘Multi Scale Entropy’

SORTED:

7. (pp. 29) $\neg\wedge$ add '. However'

SORTED:

8. (pp. 29) $\neg\wedge$ replace 'to' with 'the'

SORTED:

9. (pp. 31) $\neg\wedge$ rewrite sentence: 'showed that PeEn is...'

SORTED:

10. (pp. 32) $\neg\wedge$ add: 'fundamentals of'

SORTED:

4.2 CH2: Major corrections

1. (pp. 20) \otimes_1 I guess it would be better to cite other authors to give further references to the interested readers for fundamental definitions for signal processing in nonlinear dynamics.

SORTED:

2. (pp. 21) \otimes_1 I am wondering if citing two authors is a bit shallow to make conclusions about the deterministic chaotic characteristics of signals.

SORTED:

3. (pp. 22) \otimes_1 replace ‘,’ wiht ‘.’ and start a new stence. Maybe with: ‘The challenge is to find tools to quantify the subtle changes ... ‘

SORTED:

4. (pp. 23) \otimes_1 Have a better understanding of villancourt and newell statemetn about the model of optimal varialibtlu. Maybe add the fig of Vaillancourt

SORTED:

5. (pp. 24) \otimes_1 why $\ln(0)$ is a problem when compuyting ApEn (Richman and Moorman, 2000)? it might be worthwhile to revise the use of log in probability

SORTED:

6. (pp. 25) \otimes_1 What is a ‘coarse-grained’ time series? Maybe read Costa et al. (2002) to understand more!

SORTED:

7. (pp. 26) \otimes_1 Have a better understanding of the results of Wijnants et al. 2009.

SORTED:

8. (pp. 28) \otimes_1 Stating that EMD is still an open problem, it is a very shallow statement without doing giving further evidence! Hence, it is suggested to provide further evindence

SORTED:

9. (pp. 29) \otimes_1 sentence is required to be completed

SORTED:

10. (pp. 30) \otimes_1 Give further explanation of signal-to-noise characteristics, and what does it mean that the ratio is substantially lower?

SORTED:

5 Chapter 3

5.1 CH3: Minor corrections

1. (pp. 36) \wedge erase 'the'

SORTED:

2. (pp. 36) \wedge add 'space'

SORTED:

3. (pp. 37) \wedge replace 'we review' with 'i study'

SORTED:

4. (pp. 38) \wedge add 'from'

SORTED:

5. (pp. 39) $\neg\wedge$ replace 'the' for 'uniform'

SORTED:

6. (pp. 40) $\neg\wedge$ add commas

SORTED:

7. (pp. 41) $\neg\wedge$ increase the font size for the threshold

SORTED:

8. (pp. 41) $\neg\wedge$ add 'would experience the following' add 'uniform' Make sure that the sentence is rewritten and that make sense

SORTED:

9. (pp. 42) $\neg\wedge$ add 'comma'

SORTED:

10. (pp. 42) $\neg\wedge$ Fix reference!

SORTED:

11. (pp. 42) $\neg\wedge$ add ', for this thesis'

SORTED:

12. (pp. 42) $\neg\wedge$ add 'where, p'

SORTED:

13. (pp. 43) $\neg\wedge$ modify the subindex in the equation $p_{(i,j)}$

SORTED:

14. (pp. 44) $\neg\wedge$ add 'Principal Component Analysis'

SORTED:

15. (pp. 45) $\neg\wedge$ replace 'and' with 'where'

SORTED:

16. (pp. 46) $\neg\wedge$ delete underline line

SORTED:

17. (pp. 46) $\neg\wedge$ add: 'for'

SORTED:

18. (pp. 49) $\neg\wedge$ add: 'of'

SORTED:

19. (pp. 49) $\neg\wedge$ amend sentence: diagonal lines, for chaotic signals shorter diagonal lines, or for stochastic signals absent diagonal lines

SORTED:

20. (pp. 51) $\neg\wedge$ delete: 'has different sampling rate'

SORTED:

21. (pp. 51) $\neg\wedge$ delete: 'therefore' add: '(RSS, RP, RQA)'

SORTED:

22. (pp. 52) $\neg\wedge$ replace: 'in' with 'with'

SORTED:

23. (pp. 52) $\neg\wedge$ replace: 'our' with 'remain'

SORTED:

5.2 CH3: Major corrections

1. (pp. 35) \otimes_1 Give further explanation of box-counting (it is explained in 11.3.1 kantz and schreiber 2003)

SORTED:

2. (pp. 39) \otimes_1 Mathematical notation of FNN does not agree with descriptoins in Eqs in pages 34 and 34. Check the absolute values. Revise CAO1997 references Something like this: $X_{\tau,i}^{m+1} - X_{\tau,i(i,m)}^{m+1}$

SORTED:

3. (pp. 40) \otimes_1 Check the notation of E2 and the absolute values.

SORTED:

4. (pp. 41) \otimes_1 Why 0.05 is the right threshold value? Add extensive experiments with other chaotic time series in the Appendix to provide evidence for the selection of 0.05

SORTED:

5. (pp. 42) \otimes_1 Review Average Mutual Information equation. How is the histogram is computed and what is the relation with probablity and log values?

SORTED:

6. (pp. 44) \otimes_1 Why is the reason to choose sample mean operation for the overall value of minimum embedding values?

SORTED:

7. (pp. 47) \otimes_1 Why there is no examples of Recurrence Plots for texture of small-scale patterns?

SORTED:

8. (pp. 48) \otimes_1 how the percentage of recurrence is computed? and how the effect of the time series length affects such percentage

SORTED:

9. (pp. 49) \otimes_1 What is *dmin*? Verify formulas with R code functions!

SORTED:

10. (pp. 50-51) \otimes_1 Strength and weaknesses of RP and RQA are not well balance. It might be rewritten!

SORTED:

6 Chapter 4

6.1 CH4: Minor corrections

1. (pp. 53) $\neg \wedge_1$ replace: 'We design two experiments' with 'Two experiments were designed for this thesis: one'

SORTED:

2. (pp. 53) $\neg\wedge_2$ add: 'the other for '

SORTED:

3. (pp. 53) $\neg\wedge$ replace 'aims' with 'aim'

SORTED:

4. (pp. 53) $\neg\wedge$ replace: 'affect' with 'would be affected by'

SORTED:

5. (pp. 53) $\neg\wedge$ add: 'repetitions'

SORTED:

6. (pp. 58) $\neg\wedge$ add: 'from'

SORTED:

7. (pp. 59) $\neg\wedge$ add: ','

SORTED:

8. (pp. 62) $\neg\wedge$ add: 'Time'

SORTED:

6.2 CH4: Major corrections

1. (pp. 55) \otimes_1 Find and add code for NAO's arm movements

SORTED:

2. (pp. 60) \otimes_1 Rewrite underline section and add more evidence for magnetic disturbances for inertial sensors

SORTED:

7 Chapter 5

7.1 CH5: Minor corrections

1. (pp. 71) \wedge add: 'listeing'

SORTED:

2. (pp. 71) \wedge add: however sg2zmuVgyroY appear to be slightly affected by the smoothness as it shows similarity to the trajectories from sg0 and sg1.

SORTED:

3. (pp. 72,73,74,75) \wedge in figs 5.5 to 5.8 add: 'RSS for horizontal/vertical arm movements (with/no beat)' for participant p04

SORTED:

4. (pp. 76) \wedge replace: 'it' '-'

SORTED:

5. (pp. 76) $\neg\wedge$ revise that p01 is p04

SORTED:

6. (pp. 76) $\neg\wedge$ delete: 'the'

SORTED:

7. (pp. 77) $\neg\wedge$ replace: 'once' with 'one'

SORTED:

8. (pp. 82) $\neg\wedge$ delete an space

SORTED:

9. (pp. 83) $\neg\wedge$ replace: 'figs' with 'Figs'

SORTED:

10. (pp. 86) $\neg\wedge_1$ add: 'over z -axis'

SORTED:

11. (pp. 86) $\neg\wedge_2$ add: 'over x -axis'

SORTED:

12. (pp. 86) $\neg\wedge_3$ add: 'over y -axis'

SORTED:

13. (pp. 86) $\neg\wedge_4$ add: '3D'

SORTED:

14. (pp. 87) $\neg\wedge$ add in Fig descriptions for differnt axis 'over x -axis'

SORTED:

15. (pp. 88) $\neg\wedge$ add: 'a'

SORTED:

16. (pp. 88) $\neg\wedge$ add: 'shown'

SORTED:

17. (pp. 89) $\neg\wedge$ delete 's'

SORTED:

18. (pp. 90,91,92,93) $\neg\wedge$ Ammend the caption of figures adding the over axis $x - axis$ that is used in Fig 5.15

SORTED:

19. (pp. 94) $\neg \wedge$ add: 'of the time series'

SORTED:

20. (pp. 94) $\neg \wedge$ replace: 'C' with 'D'

SORTED:

21. (pp. 97) $\neg \wedge$ add: 'can produce'

SORTED:

22. (pp. 97) $\neg \wedge$ add: 'appears to be'

SORTED:

23. (pp. 95,96,98) $\neg \wedge$ Ammend the caption of figures adding the over axis $x - axis$ that is used in Fig 5.15

SORTED:

7.2 CH5: Major corrections

1. (pp. 70) \otimes_1 * Is there any scientific reason to choose only two parameters that represent all time series? * Does the data is losing the richness of variation of all embedded parameters when only using two parameters.

SORTED:

2. (pp. 70) \otimes_2 HUMAN MISTAKE: m_0 should be 6 and τ_0 9. However, of such error, RQA variations for different embedding paramters helps us also to understand how the surfaces change with these variation of embedding parameters!

SORTED:

3. (pp. 70) \otimes_3 Add description to describe the reason of why it is only presented one participant and also verify that p04 was the one suggested in fig1 used in figs 5.5. to 5.8

SORTED:

4. (pp. 70) \otimes_4 * What do I mean by little? * Is there any way to quantify the changes in the RSSs trajectories. EXPLAIN MORE!

SORTED:

5. (pp. 86) \otimes_1 * Why do I choose those range of values? * What was the criterium to choose those values Maybe add an appendix with more experiments for values or add an explanation of the method in chapter 3

SORTED:

6. (pp. 87) \otimes_1 Add paragraph to describe what is happening in the next sections.

SORTED:

7. (pp. 87) \otimes_2 increase the size of the font

SORTED:

8. (pp. 88) \otimes_1 What is the reason for those decreases of DET at those ϵ values?

SORTED:

9. (pp. 94) \otimes_1 What do I mean by the increase of smoothness in the 3D surface?

SORTED:

8 Chapter 6

8.1 Minor corrections

1. (pp. 100) $\neg \wedge$ change D by $E1$

SORTED:

2. (pp. 101) $\neg \wedge$ add: Similarly

SORTED:

3. (pp. 101) $\neg \wedge$ add: Box plots of

SORTED:

4. (pp. 102) $\neg\wedge$ add: minimum

SORTED:

5. (pp. 103) $\neg\wedge$ add: overall

SORTED:

6. (pp. 104) $\neg\wedge$ add paragraph for more of RSS in the appendix E.3

SORTED:

7. (pp. 107) $\neg\wedge$ change: D.4 to E.4

SORTED:

8. (pp. 108,109) $\neg\wedge$ change and by for

SORTED:

9. (pp. 113) $\neg\wedge$ over the x -axis; over the y -axis

SORTED:

10. (pp. 113) $\neg\wedge$ delete dot

SORTED:

11. (pp. 114) $\neg \wedge$ over the x -axis; over the y -axis

SORTED:

12. (pp. 122) $\neg \wedge$ add: add; in; more robust than the other RQA metrics

SORTED:

8.2 Major corrections

1. (pp. 100) \otimes_1 Why only two filter lengths were considered for the Savitzky-Golay filter? Why those particular values?

SORTED:

2. (pp. 104) \otimes_1 Explanation of why I use RQA? which should be introduced in ch5 pp.71

SORTED:

3. (pp. 107) \otimes_1 Statement on the subjectivity of a person that observe changes in RPs should be also added in p77

SORTED:

4. (pp. 113) \otimes_1 what do I mean by cascade effect in the 3D surface plot?

SORTED:

5. (pp. 113) \otimes_2 rewrite this part, as I am not really satisfied with the way it reads the description of 6.9D

SORTED:

6. (pp. 114) \otimes_1 increase the font size of RQA legend numbers!

SORTED:

7. (pp. 115) \otimes_0 add an explanation to introduce sections 6.7.1 to 6.7.4

SORTED:

8. (pp. 115) \otimes_1 add further statements about the patterns seen in other 3D surfaces and then point out what one can see in Fig 6.12

SORTED:

9 Chapter 7

9.1 Minor corrections

1. (pp. 123) \wedge replace: we with I;I; add:d

SORTED:

2. (pp. 124) \wedge add: The approach of 3D surface of RQA

SORTED:

3. (pp. 124) $\neg\wedge$ add: (Computation of m, τ, ϵ)

SORTED:

4. (pp. 124) $\neg\wedge$ replace: we with I;I;I

SORTED:

5. (pp. 125) $\neg\wedge$ replace: we with I;I;I

SORTED:

6. (pp. 125) $\neg\wedge$ add: also; additionally

SORTED:

7. (pp. 126) $\neg\wedge$ replace: we with I

SORTED:

8. (pp. 126) $\neg\wedge$ add: open

SORTED:

9. (pp. 127) $\neg\wedge$ replace: out with the

SORTED:

10. (pp. 128) $\neg\wedge$ add: ()

SORTED:

11. (pp. 129) $\neg\wedge$ replace: we with I;I;I; some with while

SORTED:

12. (pp. 129) $\neg\wedge$ add: the work of this thesis can be applied

SORTED:

13. (pp. 129) $\neg\wedge$ add: ,

SORTED:

14. (pp. 130) $\neg\wedge$ replace: and therefore with: Hence the proposed 3D surfaces of RQAEntr can provide adequate to quantify MV and to provide feedback in the HHI activity.

SORTED:

9.2 Major corrections

1. (pp. 125) \circledast_1 What do I mean by erratic changes?

SORTED:

2. (pp.) \circledast_1

SORTED:

10 APPENDIX

10.1 Minor corrections

1. (pp. 142) $\neg\wedge$ change: typo to type

SORTED:

2. (pp. 143) $\neg\wedge$ add: shows

SORTED:

10.2 Major corrections

1. (pp.) \circledast_1

SORTED: