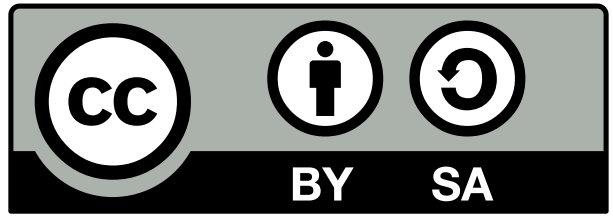


You can download the sources of this presentation here:

https://github.com/mxochicale/riots-sth-20200225

Fully Open Acesss PhD Thesis

RIOTS Club @ St Thomas

25th February 2020

Miguel Xochicale, PhD

School of Biomedical Engineering Imaging Sciences
King's College London

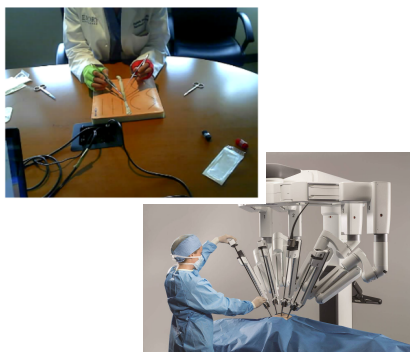
Outline

1. Introduction
2. How to start an OA thesis
3. What tools I use and other options
4. Who to follow
5. Conclusions

CONCLUSIONS

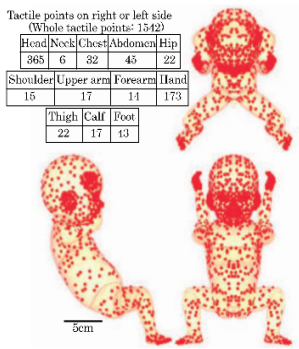
Applications of Nonlinear Dynamics

Quantification of skill learning



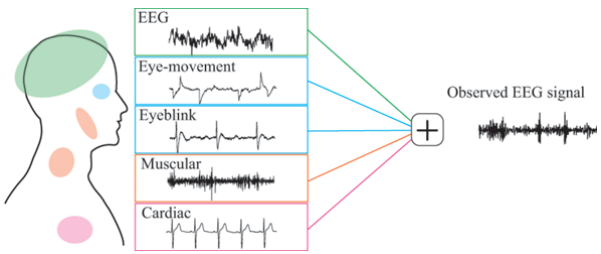
* Surgical Skills Assessment
* Robot-Assisted Surgery

Fetal behavioral development



* General movements
* Arm/Legs Movs
* Hand/Face Contacts

Nonlinear Biomedical Signal Processing



* EEG time series
* Heart rate variability
* Eye Movements

(Zia et al., 2017 in **Computer Assisted Radiology and Surgery**; Mori 2012 in **Development and Learning and Epigenetic Robotics**; Mitsukura et al., 2017 in **Electroencephalography**; Marwan et al. 2019 in **http://recurrence-plot.tk/**)

OA Publications

PEER-REVIEW CONFERENCE PAPERS

- *Towards the Analysis of Movement Variability in Human-Humanoid Imitation Activities* (HAI2017)
- *Towards the Quantification of Human-Robot Imitation Using Wearable Inertial Sensors* (HRI2017)
- *Analysis of the Movement Variability in Dance Activities using Wearable Sensors* (WeRob2016)
- *Understanding Movement Variability of Simplistic Gestures Using an Inertial Sensor* (PerDis2016)

PREPRINTS & in preparation

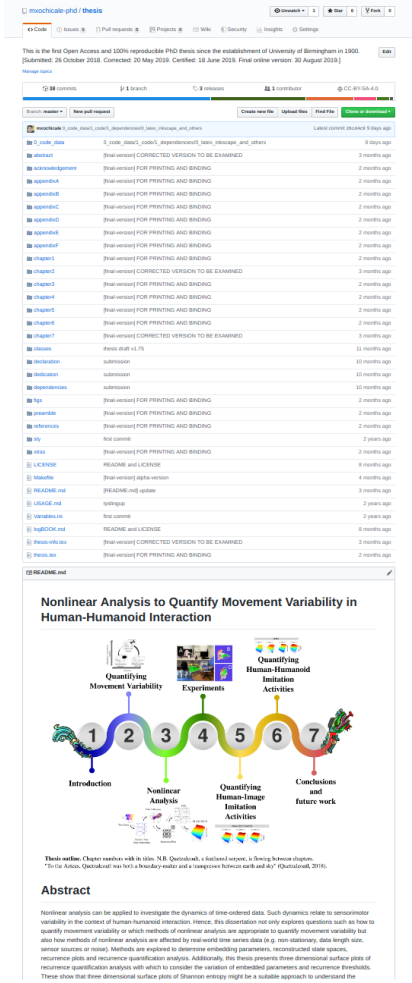
- *Strengths and weaknesses of Recurrence Quantification Analysis in the context of human-humanoid interaction* (ArXiv, October 2018) for Scientific Reports.
- *3D surface plots of RQA Shannon Entropy*
  for Frontiers in Applied Mathematics and Statistics.

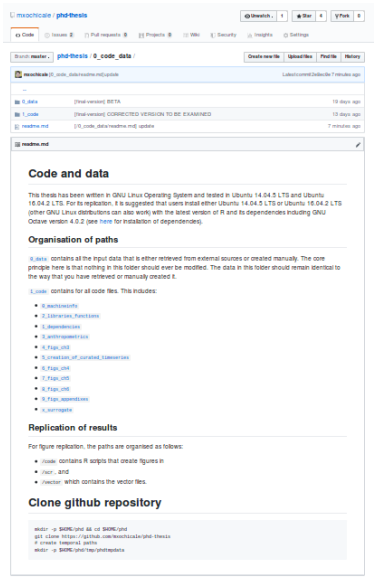
TALKS

- *Quantifying the Inherent Chaos of Human Movement Variability*
  15th Experimental Chaos and Complexity Conference
- *Towards the Analysis of Movement Variability for Facial Expressions with Nonlinear Dynamics*
  The 7th Consortium of European Research on Emotion Conference

FIRST Open Access PhD Thesis at UoB (since 1900)

https://github.com/mxochicale-phd/thesis





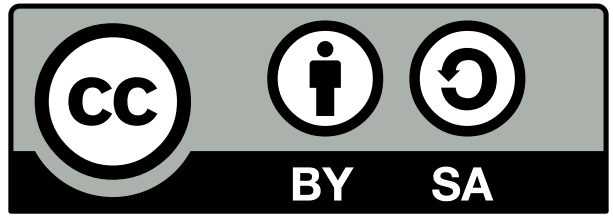
OA PhD Thesis
* LaTeX project
* Vector files

OA DATA
* Multidimensional Times-series
  22 participants,
  4 IMUs (6 axis), and
  4 Activities.

OA SOFTWARE
* R version 3.4.4 (2018-03-15)
* R packages:
  data.table
  ggplot2
  tseriesChaos
  nonlinearTseries
  RccArmadillo
* GNU Octave 4.0.2

References


Xochicale Miguel
» Nonlinear Analysis to Quantify Movement Variability in Human-Humanoid Interaction «
Open Access Ph.D. Thesis (2019)
https://github.com/mxochicale-phd/thesis



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