

Gaëtan FRUSQUE

Doctor and engineer.

Fascinated by signal processing and data science.

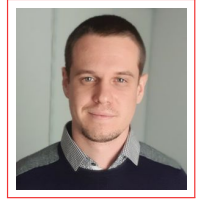
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Driving licence: Permis B



Skills

Autonomy and decision making: was the driving force behind the development of new methods, highly autonomous during the thesis.

Adaptability: show an ability to be quickly operational in different environments, international experiences.

Curiosity and creativity: love to acquire new knowledge and solve problems.

Communication: published several scientific articles, gave oral presentations in conferences and workshops, taught in engineering school (see the CV appendix).

Experiences

- 2017–2020 **ENS Lyon**, PhD: Inference and decomposition of dynamical graphs, application in neuroscience. .
- Development of dynamical graphs processing tools. Works accepted in journals/conferences in signal processing and machine learning (IEEE transaction, ICASSP ...).
 - Achievement of a method to extract the pathological cortical networks of an epileptic seizure from sEEG signals. Works accepted in a clinical journal (Frontiers in neurology).
- 02-07 2017 **CEA/Gipsa-Lab**, Grenoble, internship in statistics and bioinformatics.
- Genes identification using a Bayesian *a priori* (in the form of directed graph).
- 05-08 2016 **King Abdullah Univ. of Science and Technology**, Saudi Arabia, research internship.
- Theoretical work on the use of the Schrödinger operator to decompose complex signals.
- 06-07 2015 **Humanitarian project**, *Solida'rire*, Sokone, Senegal.
- Fundraising during the year 2014/2015, masonry work, restoration of a sanitary block.

Formation

- 2017–2020 **PhD in computer science and applied mathematics**, *LIP, ENS Lyon*.
- Unsupervised learning, time series processing, graph inference, parsimony, optimisation.
- 2016–2017 **Master Artificial Intelligence, Erasmus**, *KU Leuven*, Belgique.
- One-semester Erasmus exchange, courses in machine learning and computer science.
- 2015–2017 **Master Signal, Image, Communication and Multimedia**, *Grenoble INP Phelma*.
- Signal processing, applied mathematics, programming, electronics.
- 2012–2014 **Prepa PTSI/PT* (specialisation in industrial science)**, *Lycée déodat de Séverac*, Toulouse.
- National competitive examination for admission to the French "Grandes Ecoles".

Programming

Main Python, Matlab, R, C.
Studied SQL, Prolog, Java, VHDL.
Tools Git, Unix, Latex, suite office

Language

Vernacular French
Operational English
Notions Spanish

Interests

Guitar (11 years), classical and world music, cycling, video games and board games.

Appendix

International journals with peer review

- 03 2020 Multiplex network inference with sparse tensor decomposition for functional connectivity - Gaëtan Frusque, Julien Jung, Pierre Borgnat, Paulo Gonçalves - IEEE transaction T-SIPN
- 09 2020 Semi-automatic extraction of functional dynamic networks describing patient's epileptic seizures Gaëtan Frusque, Pierre Borgnat, Paulo Gonçalves, Julien Jung - Frontiers in Neurology

International conferences with reading committee and publication of proceedings

- 01 2020 Regularized partial phase synchrony index applied to dynamical functional connectivity estimation Gaëtan Frusque, Julien Jung, Pierre Borgnat, Paulo Gonçalves - ICASSP 2020
- 02 2020 Temporarily activated patterns for multi-trial functional connectivity data - Gaëtan Frusque, Pierre Borgnat, Paulo Gonçalves - ASPAI'2020
- 09 2019 Pattern extraction in multi-trial dynamical graphs of functional connectivities - Gaëtan Frusque, Julien Jung, Pierre Borgnat, Paulo Gonçalves - Wavelets and Sparsity XVIII

French conferences with reading committee and publication of proceedings

- 09 2019 Réduction de dimension tensorielle parcimonieuse: Application au clustering de connectivité fonctionnelle - Gaëtan Frusque, Julien Jung, Pierre Borgnat, Paulo Gonçalves - 27ème édition du colloque GRETSI

Workshop and conferences without publication of proceedings

- 10 12 2020 Conference on complex system 2020, CCS2020
- 25 09 2019 GdR ISIS conference day "Signal processing over graphs, with a focus on neuroscience data"
- 17 06 2019 GdR ISIS conference day "New tensor methods and applications"
- 06 2018 3rd Graph Signal Processing Workshop, GSP'18, EPFL - Poster presentation
- 10 2018 21st French Epilepsy Days, JFE Lyon 2018 - Poster presentation

Notable training courses followed during the thesis

- 10 2020 GdR MIA conference day "Sparse and non-convex optimisation"
- 09 2018 23ième Ecole d'été de Peyresq - Deep learning and signal processing on graph
- 07 2018 GraphSIP: Signal processing on graphs, applications in neuroscience
- 05 2018 Doctoriales 2018 : A fresh look at the challenges of innovation - 3 days of auditing and business advice
- 12 2018 One week internship in Brest - IMT Atlantique with Nicolas Farrugia

Teachings

- 60 h Random signal processing (M1 level): Estimation, Bias variance trade-off, Quadratic detection, Optimal linear filtering
- 28 h Optimisation (M1 level): Convex, non-smooth and constrained optimisation
- 24 h Digital signal processing (L3 level): TFD, FIR filtering, RII filtering
- 16 h Data Mining (M1 level): Python, Machine learning, Deep learning
- 16 h Signals and linear systems (L3 level): Sampling, Correlation
- 4 h Speech processing (M2 level)