

# Mokhtar Zahdi Alaya

PH.D. IN STATISTICS · POSTDOCTORAL RESEARCHER

✉ mokhtarzahdi.alaya@gmail.com 🌐 <http://mzalaya.free.fr> 📧 mzalaya 📄 mzalaya

## Professional experience

### Postdoctoral Researcher

LITIS LABORATORY

*Rouen Normandy University*

2019 - 2020

### Postdoctoral Researcher

LAUREATE POSTDOCTORAL FELLOWSHIP OF DIM MATH INNOV PROGRAM

*Paris Nanterre University*

2017 - 2018

### Temporary Teaching and Research Assistant

MODAL'X LABORATORY

*Paris Nanterre University*

2016 - 2017

### Temporary Teaching and Research Assistant

THEORETICAL AND APPLIED STATISTICS LABORATORY

*Pierre and Marie Curie University*

2015 - 2016

### Teaching Assistant

THEORETICAL AND APPLIED STATISTICS LABORATORY

*Pierre and Marie Curie University*

2012 - 2015

## Education

### Doctor of Philosophy Ph.D. in Statistics & Machine Learning

SEGMENTATION OF COUNTING PROCESSES AND DYNAMICAL MODELS

*Pierre and Marie Curie University*

2012 - 2016

- Thesis defended on June 27th 2016 under the supervision of Stéphane Gaïffas and Agathe Guilloux.
- **Jury:** Pierre Alquier (Examiner, ENSAE), Sylvain Arlot (Examiner, Paris-Sud University), Gérard Biau (Examiner, Pierre and Marie Curie Univ.), Stéphane Gaïffas (Supervisor, École Polytechnique), Agathe Guilloux (Supervisor, Pierre and Marie Curie Univ.), Erwan Le Pennec (Reviewer, École Polytechnique).

### Master of Science in Statistics

SUBJECT OF THE MASTER'S THESIS: CHANGE-POINTS DETECTION WITH TOTAL-VARIATION PENALIZATION

*Pierre and Marie Curie University*

2011 - 2012

- Supervision: Stéphane Gaïffas and Agathe Guilloux

### Master of Science in Probability and Random Models

SUBJECT OF THE MASTER'S THESIS: POISSON ACCESS NETWORK WITH SHADOWING: MODELING AND INFERENCE

*Pierre and Marie Curie University*

2010 - 2011

- Supervision: Bartek Bartłomiej (INRIA-ENS) and Mohamed K. Karay (Orange Labs R&D).

### Magistère of Mathematics

SUBJECT OF THE MAGISTÈRE'S PROJECT: BACKWARD STOCHASTIC DIFFERENTIAL EQUATIONS AND FINANCIAL MATH.

*University of Gabes, Tunisia*

2008 - 2010

- Supervision: Said Hamadène (University of Maine) and Ibtissem Hdhiri (University of Gabes)

## Research

### RESEARCH INTERESTS

Machine Learning (ML) Theory and Applications; High-Dimensional Statistics; Sparse Inference; Total-Variation Penalization; Change-Points Problems; Survival Analysis; Matrix Completion; Convex Optimization; ML using Optimal Transport

### PUBLICATIONS

#### [1] Screening Sinkhorn Algorithm for Regularized Optimal Transport

M. Z. ALAYA, M. BÉRAR, G. GASSO, A. RAKOTOMAMONJY

*submitted*

2019

#### [2] Collective Matrix Completion

M. Z. ALAYA, O. KLOPP

*submitted to JMLR*

2018

#### [3] Binacox: Automatic Cut-Points Detection in High-Dimensional Cox Model, with Applications to Genetic Data

S. BUSSY, M. Z. ALAYA, A. GUILLOUX, A. S. JANNOT

*Preprint*

2018

#### [4] High-Dimensional Time-Varying Aalen and Cox Models

M. Z. ALAYA, T. ALLART, A. GUILLOUX, S. LEMLER

*submitted to Scand. J. Stat.*

2017

## [5] Binarisity: a Penalization for One-Hot Encoded Features

M. Z. ALAYA, S. BUSSY, S. GAIFFAS, A. GUILLOUX

*in revision in JMLR*

2017

## [6] Learning the Intensity of Time Events with Change-Points

M. Z. ALAYA, S. GAIFFAS, A. GUILLOUX

*IEEE Trans. on Information Theory*

2015

## MANUSCRIPTS

### [1] Segmentation of Counting Processes and Dynamical Models

PHD THESIS

*Pierre and Marie Curie Univeristy*

2016

### [2] Change-Points Detection with Total-Variation Penalization

MASTER THESIS

*Pierre and Marie Curie Univeristy*

2012

### [3] Poisson Access Networks with Shadowing: Modeling and Statistical Inference

MASTER THESIS

*Pierre and Marie Curie Univeristy*

2011

### [4] Backward Stochastic Differential Equations and Financial Mathematics

MAGISTÈRE THESIS

*Univeristy of Gabes*

2010

## Teaching experience

### Statistics for Psychology

TEACHING ASSISTANT, LICENCE 1 AND 2

*Paris Nanterre University*

2016 - 2017

### Mathematics for Econometrics

TEACHING ASSISTANT, LICENCE 1

*Paris Nanterre University*

2016 - 2017

### Computer and Internet Certificate (C2I)

TEACHING ASSISTANT, LICENCE 2 AND 3

*Paris Nanterre University*

2016 - 2017

### Time Series Analysis

TEACHING ASSISTANT, MASTER 1

*Pierre and Marie Curie University*

2015 - 2016

### Mathematical Statistics

TEACHING ASSISTANT, LICENCE 3

*Pierre and Marie Curie University*

2015 - 2016

### Multivariate Regression

TEACHING ASSISTANT, MASTER 1

*Pierre and Marie Curie University*

2013 - 2014

### Linear Algebra

TEACHING ASSISTANT, LICENCE 2

*Pierre and Marie Curie University*

2012 - 2014

### Probability and Statistics

LECTURER, 3 YEAR MECHANICAL ENGINEERING

*Pierre and Marie Curie University*

2012 - 2013

## Skills

|                              |                                                        |
|------------------------------|--------------------------------------------------------|
| <b>Software Engineering</b>  | Python (2/3), Jupyter Notebook, R, Matlab              |
| <b>Python Libraries</b>      | Scikit-Learn, Pandas, Numpy, Scipy, Matplotlib, Cython |
| <b>System Administration</b> | GNU/Linux, Mac OS X, Git, PyCharm                      |
| <b>Desktop Publishing</b>    | $\text{\LaTeX}$                                        |

## Presentation

### AgroParisTech

SEMINAR

*Paris*

November 26, 2018

### LumenAI Start-up

SEMINAR

*Paris*

September 20, 2018

### 4th International Society for NonParametric Statistics

CONFERENCE

*Salerno, Italy*

June 13, 2018

### 50th Days of Statistics

CONFERENCE

*Paris Saclay, France*

May 29, 2018

### Seminar of Modal'X

SEMINAR

*Paris Nanterre University*

May 11, 2017

### 48th Days of Statistics

CONFERENCE

*Montpellier, France*

June 2, 2016

### 47th Days of Statistics

CONFERENCE

*Lille, France*

June 2, 2015

### PhD Students Working Group of Statistics

SEMINAR

*Pierre and Marie Curie University*

March 24, 2015

