



Guillaume Metzler

PhD Student, Data Scientist

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07 Janvier 1992 - Haguenau

26 ans

Permis B

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Experiences

January 2016 - **R&D Engineer - Data Scientist, Blitz Business Service Company, Villefontaine.**

Company working on check Fraud detection, their main costumers are the supermarket distribution. Main tasks :

- Implement the current system using a free software (**R**),
- Working with graphs and loyalty cards to improve the fraud detection,
- Include the notion of profits of a supermarket in the fraud detection model.
- Working with Linear Discriminant Analysis and Random Forest to improve the current model with sampling methods,
- Working with: SVM, Logistic Regression, Decision Trees, Random Forests, ...
- Development of a new model using a Metric Learning approach .

2015 **R&D Engineer, Blitz Business Service Company, Villefontaine.**

October - *Fixed-term employee before starting my PhD. Knowledge around the notion of Fraud and*
December *Anomaly detection. Working on False checks and implement some strategies using Boosting*
Methods combine with SVM and basics optimization algorithms, multi-dimensional scaling.

2015 **Internship at INRIA Villeurbanne (Team Dracula), Supervisors: Fabien**

March- **Crauste et Olivier Gandrillon.**

September *Study the variability of Immune Response in a population of mice using Mixed Effect Model.*
Building a model of Ordinary Differential Equations and use the Data to fit the parameters of
the model using an SAEM algorithm (Implemented in Monolix). (6 months)

2014 **Internship at ICPEES (CNRS Strasbourg), Supervisor : Guy Schlatter.**

June - July *Modeling using finite element of the Eletrospinning process (6 weeks).*

Education

January 2016- **PhD Student: Machine Learning, University of Jean-Monnet - Saint-Etienne, ,**
June 2019 **PhD on the topic of Fraud and Anomaly Detection.**

2012 – 2015 **Magistere: Mathematics, University of Strasbourg,** Fundamental and Applied
Mathematics with honors, rank: 4/12 during the first year, rank: 5/12 during the
second year.

2014 – 2015 **Master 2: Applied Mathematics, University of Claude Bernard Lyon 1,** Mathe-
matics applied to Biology and Medicine with distinction.

2013 – 2014 **Master 1: Fundamental Mathematics, University of Strasbourg,** Fundamental
and Applied Mathematics with distinction, rank: 8/28.

2012 – 2013 **Bachelor: Fundamental Mathematics , University of Strasbourg,** Fundamental
and Applied Mathematics with honors, rank: 7/65.

2010 – 2012 **"Classe Préparatoire aux Grandes Ecoles (CPGE)", MPSI-MP, Lycée Kléber,**
Strasbourg.

2010 **Baccalauréat Scientifique, Alphonse Heinrich High School - Haguenau,** Option
Mathematics, With Honors.

Teaching Assistance

2017-2018 **Master 1: Optimization & Operational Research**, *Convex Sets and Functions*,
University of *Linear Algebra, Gradient Descent Algorithm and its variants, Application to Logistic*
Jean Monnet *Regression, Condition Number, Practical Session using R*, (18 hours).

Master 1: Introduction in Machine Learning, *Generalization, Cross-Validation*,
k-NN algorithm, Bayesian Approaches, (6 hours).

2016-2017 **Master 1: Optimization & Operational Research**, *Convex Sets and Functions*,
University of *Linear Algebra, Gradient Descent Algorithm and its variants, Practical Session using*
Jean Monnet *R*, (10 hours).

Publications



Learning maximum excluding ellipsoids from imbalanced data with theoretical guarantees, *G. Metzler, X.Badiche, B.Belkasmi, E. Fromont, A. Habrard and M. Sebban*, Pattern Recognition Letter, 2018.

IDA
2018

Tree-based Cost Sensitive Methods for Fraud Detection in Imbalanced Data, *G. Metzler, X.Badiche, B.Belkasmi, E. Fromont, A. Habrard and M. Sebban*, International Symposium on Intelligent Data Analysis (IDA), Netherlands, 2018.



CONE : Un algorithme d'optimisation de la F-Mesure par pondération des erreurs de classification, *K. Bascol, R. Emonet, E. Fromont, A. Habrard, G. Metzler and M. Sebban*, Conférence sur l'Apprentissage Automatique (CAp), Rouen, 2018.



Apprentissage de sphères maximales d'exclusion avec garanties théoriques, *G. Metzler, X.Badiche, B.Belkasmi, S. Canu, E. Fromont, A. Habrard and M. Sebban*, Conférence sur l'Apprentissage Automatique (CAp), Grenoble, 2017.

Computer Skills

R, Scilab, Maple, Monolix, Feel ++, L^AT_EX

Languages

English **University level**

10 years of study – TOEIC : 710 / 990

German **CPGE level**

9 years of study

Other Activites

Sport Running, Cycling, Fitness

Jobs 2010 – Working as Logistician during the summer (SCHAEFLER France) 4x8, 2x8
2014