



Guillaume Metzler

Postdoctoral Researcher

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01/07/1992 - Haguenau

28 years old

Driving License

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Experiences

- October 2019 - **Postdoctoral Researcher - Hubert Curien Laboratory University of Saint-Etienne.**
March 2020
*Position funded by the ANR project LIVES and under the supervision of Amaury Habrard.
Topics of research: Metric Learning for Imbalanced data (with a PhD Student) and Domain Adaptation using PAC Bayes Theory*
- January 2016 - **PhD Student - Hubert Curien Laboratory University of Saint-Etienne.**
September 2019
*Learning from Imbalanced Data: an Application to Bank Fraud Detection
Topics of research: Statistical Theory - Optimization - Supervised Learning - Imbalanced Classification - Metric Learning - Algorithm Stability - Boosting*
- January 2016 - **R&D Engineer - Data Scientist, Blitz Business Service Company, Villefontaine.**
January 2019
Company working on check Fraud detection. Main tasks :
 - Implement their current system using a free software.
 - Working on graphs using loyalty cards to improve the fraud detection algorithm.
 - Improve retailers benefits using cost-sensitive methods.
- 2015 **R&D Engineer, Blitz Business Service Company, Villefontaine.**
October - December
Fixed-term employee before starting my PhD.
- 2015 **Internship at INRIA Villeurbanne (Team Dracula),** Supervisors: Fabien Crauste et Olivier Gandrillon.
March-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 using the software Monolix (6 months)
- 2014 **Internship at ICPEES (CNRS Strasbourg),** Supervisor : Guy Schlatter.
June - July
Modeling using finite element of the Electrospinning process (6 weeks).

Education

- January 2016- **PhD Student: Machine Learning, University of Jean-Monnet - Saint-Etienne, ,**
September 2019
PhD on the topic of Fraud and Anomaly Detection, Defended the 25th September 2019. Jury Members:.
 - Marianne Clausel (Reviewer)
 - Marc Tommasi (Reviewer)
 - Yves Grandvalet (President)
 - Elisa Fromont (Co-supervisor)
 - Amaury Habrard (Co-supervisor)
 - Marc Sebban (Director).
- 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,** Mathematics 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

- 2019-2020 **Bachelor 1: Numerical tools**, *Introduction to L^AT_EX and the use of the Terminal with Linux*, (36 hours).
University of Jean Monnet (In French)
- Bachelor 1: Data Bases**, *Introduction to the use of data bases and SQL Server*, (48 hours).
(In French)
- Bachelor 1: Introduction to Python**, *Introduction to Python*, (60 hours).
(In French)
- 2019-2020 **Bachelor 1: Data Analysis**, *Read, manipulate, show the results of a survey and teach how to analyze them to extract information. Use of Sphinx Campus software*, (36 hours).
EM Lyon (In French)
- 2018-2019 **Master 1: Optimization & Operational Research**, *Convex Sets and Functions, Linear Algebra, Gradient Descent Algorithm and its variants, Application to Logistic Regression, Condition Number, Practical Session using R*, (14 hours).
University of Jean Monnet (In English)
- 2017-2018 **Master 1: Optimization & Operational Research**, *Convex Sets and Functions, Linear Algebra, Gradient Descent Algorithm and its variants, Application to Logistic Regression, Condition Number, Practical Session using R*, (18 hours).
University of Jean Monnet
- Master 1: Introduction in Machine Learning**, *Generalization, Cross-Validation, k-NN Algorithm, Bayesian Approaches*, (6 hours).
(In English)
- 2016-2017 **Master 1: Optimization & Operational Research**, *Convex Sets and Functions, Linear Algebra, Gradient Descent Algorithm and its variants, Practical Session using R*, (10 hours).
University of Jean Monnet (In English)

Publications

Journals



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.

International Conferences



An Adjusted Nearest-Neighbor Algorithm Maximizing the F-Measure from Imbalanced Data, R. Viola, R. Emonet, A. Habrard, G. Metzler, S. Riou and M. Sebban, In *Proceedings in the 31st International Conference on Tools with Artificial Intelligence (ICTAI)*, Portland, Oregon, USA, November 2019.



From Cost-Sensitive Classification to Tight F-Measure Bounds, K. Bascol, R. Emonet, A. Habrard, G. Metzler and M. Sebban, In *Proceedings in the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, Naha, Okinawa, Japan, April 2019.

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

National Conferences



CONE : Une version ajustée de l'algorithme des plus proches voisins maximisant la F-mesure, R. Viola, R. Emonet, A. Habrard, G. Metzler, S. Riou and M. Sebban, Conférence sur l'Apprentissage Automatique (CAp), Toulouse, France, 2019.



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, France, 2018.



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

Reviews

Reviewer Machine Learning journal (ECML 2018)
Co-Reviewer AISTATS 2020 (with Amaury Habrard)- Machine Learning journal (ECML 2017, with Elisa Fromont)

Other activities

Help in the organization of the MISNC conference in 2018 in Saint-Etienne.

Computer Skills

R, Scilab, Maple, Monolix, Feel ++, L^AT_EX, Python (currently learning)

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
Teaching Mathematics and Physics for students in high school and 1B.