Timothée Mathieu – CV

Post-Doc @ INRIA, équipe SCOOL

Contact

- Website: `https://timotheemathieu.github.io`
- Email: timothee.mathieu@inria.fr.

Research Interests

Robust estimation, Multi-armed Bandits, M-estimation, high-dimensional statistics, concentration of measure, supervised learning, empirical processes.

Employment

2021–2022 Post-Doc at INRIA, équipe SCOOL, Lille.

Education

2018–2021 Ph.D. at Paris-Saclay University.
Subject: M-estimators and Median-of-Means Applied to Statistical Learning.
Supervisors: Matthieu Lerasle and Guillaume Lecué.
Ph.D. jury members: Gilles Blanchard (President), Christophe Biernacki (Reviewer), David Donoho (Reviewer), Olivier Catoni (Jury), Po-Ling Loh (Jury) and Elvezio Ronchetti (Jury).
Defended on 13^{rd} of January 2021.

2016–2017 M.Sc. (2^{nd} year) at ENS Cachan; specialization in Mathematics for Vision and Learning.
During this Master, I followed two courses on Reinforcement Learning.
One by Alessandro Lazaric, the other by Vianney Perchet.

2015–2016 M.Sc. (1^{st} year), with specialization in functional analysis, probability theory and calculus at ENS Cachan (Department of Mathematics).

2014–2015 B.Sc. (3^{rd} year), at ENS Cachan (Department of Mathematics).

2012–2014 Preparatory School to Grandes Ecoles (specifically B.Sc. 1^{st} and 2^{nd} year).

Membership

2018–2021 Member of the CELESTE team (INRIA).

Teaching Experience

2018–2021 Teaching Assistant for courses on Statistics in Paris-Saclay University.

Invited Talks

2021 Étude robuste de M-estimateurs consistants via une distance de ¿ transport optimal (presentation, 30 min
journées MAS

2021 M-estimation and Median of Means for Robust Machine Learning (presentation, 60 minutes)
Geneva School of Economics and Management (GSEM, University of Geneva)

2020 Concentration Inequalities on M-estimators for Robust Mean Estimation (presentation, 30 minutes)
Winter School on Mathematical Statistics, University of Luxembourg

2019 Robust Machine Learning (presentation, 20 minutes)
StatMathAppli Statistics Summer School at Fréjus

2018 Robust Machine Learning (presentation, 50 minutes)
Machine Learning and Massive Data Analysis (MLMDA) research group, ENS Cachan.

Reviewing for Journals

2022 Bernoulli Journal.
2021 Annales de l'Institut Henri Poincaré.
2019 Journal of the American Statistical Association (JASA).

Reviewing for Conferences

2021-2022 Neural Information Processing Systems (NIPS-2021).
2021 International Conference on Machine Learning (ICML-2021).

2020 International Conference on Learning Representations (ICLR-2021).

Internships

2017-2018 Internship at University of Geneva
Subject: Robust Statistics and Their Applications to the Median-of-Means
Supervisor: Elvezio Ronchetti
Duration: 9 months

2017-2018 Internship at University of Orsay
Subject: Median-of-Means Risk Minimization, a Robust Version of Empirical Risk Minimization Methods
Supervisor: Matthieu Lerasle
Duration: 4 months

2015-2016 Internship at University of Toulouse, at the Mathematical Institute of Toulouse (IMT)
Subject: Study of a Clustering Criterion
Supervisors: Sébastien Gerchinovitz and Aurélien Garivier
Duration: 4 months

2015-2016 Internship at ENS Cachan, Center of Mathematics and Their Applications (CMLA)
Subject: Analysis of Time-Frequency Physiological Signals
Supervisor: Thomas Moreau
Duration: 4 months

Attendance of Conferences and Summer Schools

2020 Winter School on Mathematical Statistics, University of Luxembourg
2020 Meeting in Mathematical Statistics, CIRM
2020 International Conference on Machine Learning (ICML)
2019 Saint-Flour Statistics and Probability Summer School
2019 StatMathAppli statistics summer school at Fréjus

Software

Python

• RLbrry: Reinforcement Learning python library for research and teaching (https://github.com/rlberry-py/rlberry)
• Robust module in the scikit-learn-extra library, (https://github.com/scikit-learn-contrib/scikit-learn-extra),
• Outlier-robust mean embedding and maximum mean discrepancy estimators, (https://bitbucket.org/TimotheeMathieu/monk-mmd)
• Robust Regression and Classification, (https://github.com/TimotheeMathieu/Excess-risk-bounds-in-robust-empirical-risk-minimization)
• Robust Classification with Median of Means (https://github.com/TimotheeMathieu/MOM_Classification)

Skills Python, R, Linux, Matlab, Maple, LaTeX

Journal Articles & Conference Papers

[1] Claire Brécheteau, Edouard Genetay, Timothee Mathieu, and Adrien Saumard. Topics in robust statistical learning. *ESAIM: Proceedings and Surveys*, 2022.

[2] Stanislav Minsker and Timothée Mathieu. Excess risk bounds in robust empirical risk minimization. *Information and Inference: A Journal of the IMA*, 2020.

[3] Matthieu Lerasle, Timothée Mathieu, and Guillaume Lecué. Robust classification via MOM minimization. *Machine Learning*, 109(8):1635–1665, 2020.

[4] Matthieu Lerasle, Zoltán Szabó, Timothée Mathieu, and Guillaume Lecué. MONK – outlier-robust mean embedding estimation by median-of-means. In *International Conference on Machine Learning (ICML)*, pages 3782–3793, 2019.

Preprints

[1] Debabrota Basu, Odalric-Ambrym Maillard, and Timothée Mathieu. Bandits corrupted by nature: Lower bounds on regret and robust optimistic algorithm, 2022.

[2] Timothée Mathieu. Concentration study of m-estimators using the influence function. *https://arxiv.org/abs/2104.04416*, 2021.