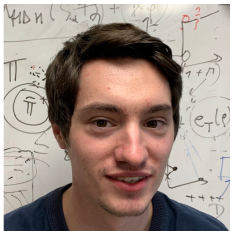

PAUL VIALLARD

Researcher in Computer Science and Machine Learning

General Information

Birth: 12-14-1996 in Berlin, Germany
Nationalities: French/German
Languages: French (C2 level), English (C1 level), German (A2 level)

Email: paul.viallard@inria.fr
Site web: https://paulviallard.github.io/
Google Scholar: https://scholar.google.fr/citations?hl=en&user=k-5mpncAAAAJ/
GitHub: https://github.com/paulviallard/

Education

2022 PhD in Computer Science (and Machine Learning)
Jean Monnet University, Saint-Etienne, France
PAC-Bayesian Bounds and Beyond: Self-Bounding Algorithms and New Perspectives on Generalization in Machine Learning
Supervisors:

- Prof. Amaury Habrard, Professor, Jean Monnet University, Saint-Etienne, France
- Dr. Pascal Germain, Assistant professor, Laval University, Canada
- Dr. Emilie Morvant, Assistant Professor, Jean Monnet University, Saint-Etienne, France

Reviewers:

- Prof. Stéphane Canu, Professor, INSA Rouen, France
- Prof. Liva Ralaivola, VP Research, Criteo AI Lab, France

Examinator:

- Prof. Marc Tommasi, Professor, Université de Lille, Inria, France

President of the jury and Examinator:

- Prof. Rémi Gribonval, Senior Researcher, ENS Lyon, Inria, France

2019 MSc. Machine Learning and Data Mining *(Master "Machine Learning and Data Mining" avec mention très bien)*
Jean Monnet University, Saint-Etienne, France
Interpreting Neural Networks as Majority Votes with the PAC-Bayesian Theory
Supervisors:

- Dr. Rémi Emonet, Assistant Professor, Jean Monnet University, Saint-Etienne, France
- Prof. Amaury Habrard, Professor, Jean Monnet University, Saint-Etienne, France
- Dr. Emilie Morvant, Assistant Professor, Jean Monnet University, Saint-Etienne, France

2017 BSc. Computer Science *(Licence Informatique avec mention très bien)*
Jean Monnet University, Saint-Etienne, France

2014 French Baccalauréat of Science *(BAC S avec mention bien)*
Lycée Jacob Holtzer, Firminy, France

Research Activities

Work Experience

February 2023 -	**Postdoctoral researcher** *SIERRA Project-Team* *Inria Paris, France* *Supervisor:* Dr. Umut Şimşekli
September 2019 - December 2022	**Doctoral researcher** *Data Intelligence Team* *Hubert Curien Laboratory UMR CNRS 5516* *Jean Monnet University, Saint-Etienne, France* *Supervisors:* Prof. Amaury Habrard, Dr. Pascal Germain, Dr. Emilie Morvant
February 2019 - June 2019	**Research intern** *Data Intelligence Team* *Hubert Curien Laboratory UMR CNRS 5516* *Jean Monnet University, Saint-Etienne, France* *Supervisors:* Prof. Amaury Habrard, Dr. Emilie Morvant and Dr. Rémi Emonet
April 2018 - June 2018	**Research intern** *SNA-EPIS Laboratory EA 4607* *Jean Monnet University, Saint-Etienne, France* *Supervisors:* Prof. Vincent Pichot and Prof. Jean-Claude Barthélémy

Publications

Articles in International Peer-Reviewed Conference

1. **Learning via Wasserstein-Based High Probability Generalisation Bounds**
   Paul Viallard, Maxime Haddouche, Umut Şimşekli, Benjamin Guedj
   Conference on Neural Information Processing Systems (NeurIPS), New Orleans, 2023
   (paper)

2. **Self-Bounding Majority Vote Learning Algorithms by the Direct Minimization of a Tight PAC-Bayesian C-Bound**
   Paul Viallard, Pascal Germain, Amaury Habrard, Emilie Morvant
   European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD), online, 2021
   (paper) (supplementary material) (source code)

3. **Learning Stochastic Majority Votes by Minimizing a PAC-Bayes Generalization Bound**
   Valentina Zantedeschi, **Paul Viallard**, Emilie Morvant, Rémi Emonet, Amaury Habrard, Pascal Germain, Benjamin Guedj
   Conference on Neural Information Processing Systems (NeurIPS), online, 2021
   (abstract) (paper) (supplementary material)

4. **A PAC-Bayes Analysis of Adversarial Robustness**
   Paul Viallard, Guillaume Vidot, Amaury Habrard, Emilie Morvant
   Conference on Neural Information Processing Systems (NeurIPS), online, 2021
   (abstract) (paper) (supplementary material) (source code)

Articles in International Peer-Reviewed Journal

5. **A General Framework for the Practical Disintegration of PAC-Bayesian Bounds**
   Paul Viallard, Pascal Germain, Amaury Habrard, Emilie Morvant
   Machine Learning Journal (and presented at ECML-PKDD 2023), 2023
   (paper) (source code)

Articles in International Peer-Reviewed Workshop

6. **Interpreting Neural Networks as Majority Votes through the PAC-Bayesian Theory**
   Paul Viallard, Rémi Emonet, Pascal Germain, Amaury Habrard, Emilie Morvant
   NeurIPS 2019 Workshop on Machine Learning with guarantees, Vancouver, Canada, 2019
   (paper)

Unpublished Research Reports

7. **Semi-Universal Adversarial Perturbations**
   Jordan Frecon, **Paul Viallard**, Emilie Morvant, Gilles Gasso, Amaury Habrard, Stéphane Canu
   2023
   (paper)

8. **Generalization Bounds with Arbitrary Complexity Measures**
   Paul Viallard, Rémi Emonet, Amaury Habrard, Emilie Morvant, Valentina Zantedeschi
   2023
   (paper)

Communications in Peer-Reviewed French Conference

9. **Bornes de généralisation : quand l'information mutuelle rencontre les bornes PAC-Bayésiennes et désintégrées**
   Paul Viallard
   Conférence sur l'Apprentissage automatique (CAp), Strasbourg, 2023

10. **Intérêt des bornes désintégrées pour la généralisation avec des mesures de complexité**
    Paul Viallard, Rémi Emonet, Pascal Germain, Amaury Habrard, Emilie Morvant, Valentina Zantedeschi
    Conférence sur l'Apprentissage automatique (CAp), Vannes, 2022

11. **Learning Stochastic Majority Votes by Minimizing a PAC-Bayes Generalization Bound**
    Valentina Zantedeschi, **Paul Viallard**, Emilie Morvant, Rémi Emonet, Amaury Habrard, Pascal Germain, Benjamin Guedj
    Conférence sur l'Apprentissage automatique (CAp), Vannes, 2022

12. **Apprentissage de Vote de Majorité par Minimisation d'une C-Borne**
    Paul Viallard, Emilie Morvant, Pascal Germain
    Conférence sur l'Apprentissage automatique (CAp), online, 2021

13. **Dérandomisation des Bornes PAC-Bayésiennes**
    Paul Viallard, Emilie Morvant, Pascal Germain
    Conférence sur l'Apprentissage automatique (CAp), online, 2021

14. **Une Analyse PAC-Bayésienne de la Robustesse Adversariale**
    Guillaume Vidot, **Paul Viallard**, Emilie Morvant
    Conférence sur l'Apprentissage automatique (CAp), online, 2021

15. **Théorie PAC-Bayésienne pour l'apprentissage en deux étapes de réseaux de neurones**
    Paul Viallard, Rémi Emonet, Amaury Habrard, Emilie Morvant, Pascal Germain
    Conférence sur l'Apprentissage automatique (CAp), online, 2020

Talks

Seminars

April 12th, 2023	**Complexity Measures in Generalization Bounds: New Results and Future Directions** Seminar of the OBELIX Team, Université Bretagne-Sud, Online
May 9th, 2022	**Towards a Practical Use of PAC-Bayesian Generalization Bounds for Learning** Seminar of the SIERRA Team, INRIA Paris, Paris, France
December 8th, 2021	**A PAC-Bayes Analysis of Adversarial Robustness** **Learning Stochastic Majority Votes by Minimizing a PAC-Bayes Generalization Bound** NeurIPS21@Paris, Sorbonne University, Paris, France
November 16th, 2021	**Learning Stochastic Majority Votes by Minimizing a PAC-Bayes Generalization Bound** TAUDoS Meeting, Jean Monnet University, Saint-Etienne, France
June 18th, 2021	**Majority Vote Learning in PAC-Bayesian Theory: State of the Art and Novelty** Signal Processing - Machine Learning Seminars, CNRS LIS, Aix-Marseille University, Online
October 27th, 2020	**Derandomization of PAC-Bayesian Bounds: A General Pointwise Approach** APRIORI Meeting, Online
July 1st, 2019	**Interpreting Neural Networks as Majority Votes with the PAC-Bayesian Theory** PhD Student Seminars, Jean Monnet University, Saint-Etienne, France
May 27th, 2019	**Interpreting neural networks as majority votes** APRIORI Meeting, Inria Paris, Paris, France

Science Popularization

November 27th, 2020	**La pop culture dans l'oeil des expert·es !** Nuit Européenne des Chercheur·e·s 2020, YouTube

Student Supervisions

April 2022 - July 2022	**Alexiane Fraisse** Random Fourier Features and Domain Adaptation Supervised with Dr. Guillaume Metzler and Dr. Emilie Morvant
April 2021 - June 2021	**Luiza Dzhidzhavadze** A Multiclass C-Bound-Based Algorithm Supervised with Dr. Emilie Morvant
April 2021 - June 2021	**Himanshu Pandey** A Multiclass C-Bound-Based Algorithm Supervised with Dr. Emilie Morvant

Participation in Research Projects

- European Research Council Starting Grant DYNASTY 101039676 - Project member (Postdoc founded by this project)
- ANR PRAIRIE 3IA Institute ANR-19-P3IA-0001 – Project member (Postdoc founded by this project)
- ANR APRIORI ANR-18-CE23-0015 – Project member (PhD founded by this project)
- ANR TAUDoS ANR-20-CE23-0020 – Project member

Reviewing

2023	ICML 2023, NeurIPS 2023 Information and Inference: a Journal of the IMA
2022	ICML 2022
2021	ICML 2021, CAp 2021
2020	IDA 2020, ICML 2020

Administrative Activities

2021	Member of CAp 2021's organization committee
May 2021 - January 2023	Board Member of the FIL (Fédération Informatique de Lyon)
May 2021 - January 2023	Board Member of the Hubert Curien Laboratory
January 2020 - November 2021	Secretary in the PhD students association of Saint-Etienne

Teaching Activities **(In French)**

2021-2022

L2 Informatique

Advanced programming in C	18h TP
Introduction to Operating Systems	5h CM / 10h TP

L2 Informatique (pour les étudiants en alternance)

Introduction to debugging in C	2h CM / 2h TP

L1 Mathématiques-Informatique-Physique-Chimie

Introduction to Artificial Intelligence	6h CM

2020-2021

L2 Informatique

Advanced programming in C	18h TP
Introduction to Operating Systems	7h CM / 9h TD

L2 Informatique (pour les étudiants en alternance)

Introduction to debugging in C	2h CM

L1 Mathématiques-Informatique-Physique-Chimie

Introduction to Artificial Intelligence	6h CM
Introduction to LaTeX	16h TP
Programming in Python	14h TP

2019-2020

L2 Informatique

Advanced programming in C	36h TP

L1 Mathématiques-Informatique-Physique-Chimie

Introduction to Artificial Intelligence	4h CM
Introduction to LaTeX	8h TP
Programming in Python	14h TD