

# Short Curriculum Vitæ

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Born March 2, 1983  
French citizen

## Administrative status

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2015–... **Professor** *University Paris-Sud/Saclay, Mathematics department.*  
2020–2025 **Junior member** *Institut Universitaire de France (IUF)*  
2012–2015 **CNRS junior researcher (1st class)** *DI ENS, École Normale Supérieure, Paris*  
2008–2012 **CNRS junior researcher (2nd class)** *DI ENS, École Normale Supérieure, Paris*  
2005–2008 **PhD fellow** *Université Paris-Sud, Orsay*

## Main research interests

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Statistical learning, non-parametric statistics. More precisely:

- Data-driven tuning of learning algorithms, model selection, penalization, (V-fold) cross-validation.
- Random forests.
- Change-point detection.

## Main publications

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1. (2021) Guillaume Maillard, Sylvain Arlot and Matthieu Lerasle **Aggregated hold-out** *Journal of Machine Learning Research* 22(20):1–55
2. (2020) Tuan-Binh Nguyen, Jérôme-Alexis Chevalier, Bertrand Thirion and Sylvain Arlot **Aggregation of Multiple Knockoffs** *International Conference on Machine Learning, PMLR 119* Python code available at <https://github.com/ja-che/hidimstat>
3. (2019) Sylvain Arlot, Alain Celisse and Zaïd Harchaoui **Kernel change-point detection** *Journal of Machine Learning Research* 20 (162):1–56
4. (2019) Sylvain Arlot **Minimal penalties and the slope heuristics: a survey** *Journal de la Société Française de Statistique, Vol. 160 No. 3, pages 1–106, 158–168* With discussion and rejoinder.
5. (2019) Sylvain Arlot, Stefano Marmi and Duccio Papini **Coupling the Yoccoz-Birkeland population model with price dynamics: chaotic livestock commodities market cycles** *Nonlinearity, Volume 32, Number 7, pp 2564–2592*
6. (2018) Damien Garreau and Sylvain Arlot **Consistent change-point detection with kernels** *Electronic Journal of Statistics, Vol. 12, No. 2, 4440–4486 (electronic).*

7. (2016) Sylvain Arlot and Robin Genuer **Comments on: A random forest guided tour** *TEST. June 2016, Volume 25, Issue 2*, pp 228–238.
8. (2016) Sylvain Arlot and Matthieu Lerasle **Choice of  $V$  for  $V$ -Fold Cross-Validation in Least-Squares Density Estimation** *Journal of Machine Learning Research* 17(208):1–50.
9. (2016) Rémi Lajugie, Piotr Bojanowski, Philippe Cuvillier, Sylvain Arlot and Francis Bach **A weakly-supervised discriminative model for audio-to-score alignment** *41st International Conference on Acoustics, Speech, and Signal Processing (ICASSP), March 2016, Shanghai, China*.
10. (2014) Damien Garreau, Rémi Lajugie, Sylvain Arlot and Francis Bach **Metric Learning for Temporal Sequence Alignment** *Advances in Neural Information Processing Systems (NEURIPS) 27*, 1817–1825.
11. (2014) Rémi Lajugie, Sylvain Arlot and Francis Bach **Large-Margin Metric Learning for Constrained Partitioning Problems** *International Conference on Machine Learning, JMLR W&CP 32 (1)*: 297–305.
12. (2012) Matthieu Solnon, Sylvain Arlot and Francis Bach **Multi-task regression using minimal penalties** *Journal of Machine Learning Research* 13(Sep):2773–2812
13. (2011) Sylvain Arlot and Peter L. Bartlett **Margin-adaptive model selection in statistical learning** *Bernoulli, Vol. 17, No 2*, 687–713.
14. (2010) Sylvain Arlot and Alain Celisse **Segmentation of the mean of heteroscedastic data via cross-validation** *Statistics and Computing, 2010 (1–20)*.
15. (2010) Sylvain Arlot and Alain Celisse **A survey of cross-validation procedures for model selection** *Statistics Surveys, 4*, 40–79 (electronic).
16. (2010) Sylvain Arlot, Gilles Blanchard and Étienne Roquain **Some non-asymptotic results on resampling in high dimension, I: confidence regions** *The Annals of Statistics, Vol. 38, No. 1*, 51–82.
17. (2010) Sylvain Arlot, Gilles Blanchard and Étienne Roquain **Some non-asymptotic results on resampling in high dimension, II: multiple tests** *The Annals of Statistics, Vol. 38, No. 1*, 83–99.
18. (2009) Sylvain Arlot **Model selection by resampling penalization** *Electronic Journal of Statistics, 3*, 557–624 (electronic).
19. (2009) Josselin Desmars, Sylvain Arlot, Jean-Eudes Arlot, Valery Lainey and Alain Vienne **Estimating the accuracy of satellite ephemerides using the bootstrap method** *Astronomy and Astrophysics, 499*, 321–330.
20. (2009) Sylvain Arlot and Pascal Massart **Data-driven calibration of penalties for least-squares regression** *Journal of Machine Learning Research. 10(Feb)*:245–279.
21. (2009) Sylvain Arlot and Francis Bach **Data-driven calibration of linear estimators with minimal penalties** *Advances in Neural Information Processing Systems (NEURIPS) 22*, 46–54.
22. (2007) Sylvain Arlot, Gilles Blanchard and Étienne Roquain **Resampling-based confidence regions and multiple tests for a correlated random vector** *Proceedings of the Conference On Learning Theory (COLT 2007)*.

### Books and book chapters

23. (2018) Sylvain Arlot **Fondamentaux de l'apprentissage statistique** In *M. Maumy-Bertrand, G. Saporta & C. Thomas-Agnan (éd.), Journées d'Études en Statistique (JES) 2016: Apprentissage statistique et données massives, Éd. Technip* pages 17–139
24. (2018) Sylvain Arlot **Validation croisée** In *M. Maumy-Bertrand, G. Saporta & C. Thomas-Agnan (éd.), Journées d'Études en Statistique (JES) 2016: Apprentissage statistique et données massives, Éd. Technip* pages 141–174

## Teaching book

25. (2015) Sylvain Arlot, Aurélien Garivier and Gilles Stoltz **Exercices d’oral de mathématiques** *Collection Références sciences, Ellipses*. 528 pages.

## Distinctions

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- PEDR (2017–2025) and PES (2011–2014) bonuses**  
2020–2025 **Junior member** Institut Universitaire de France (IUF)  
2011 **Ph.D. dissertation award Marie-Jeanne Laurent-Duhamel** French Statistical Society  
2010–2011 **Peccot Lecture** Collège de France

## Member of scientific projects and networks

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- 2019– **Leader of the Celeste Project-team** INRIA Saclay  
See also <https://www.imo.universite-paris-saclay.fr/celeste/index.html>.  
2020–2024 **Member of BiSCottE: Bridging Statistical and COMpuTaTional Efficiency in artificial intelligence** (scientific leader: Gilles Blanchard, LMO, Univ. Paris-Saclay; 600 kE)  
2018–2022 **Coordinator for U. Paris-Sud/Saclay of the ANR project Fast-Big** (leader: Bertrand Thirion, INRIA Saclay)  
See also <https://project.inria.fr/fastbig/>.  
2015–2018 **Member of the Select Project** INRIA Saclay  
2015 **Member of the project BeFast (CNRS, PEPS Fascido)** (leader: Alain Celisse, Université Lille 1)  
2013–2014 **Member of the MASTODONS project Gargantua** (leader: Zaïd Harchaoui, INRIA Grenoble)  
2012–2016 **Member of the ANR project Calibration** (leader: Vincent Rivoirard, Univ. Paris Dauphine)  
2011–2015 **Member of the Sierra Project** INRIA Paris  
2009–2012 **Leader of the ANR project Detect: “New statistical approaches for computer vision and bioinformatics”**  
See also <http://www.math.u-psud.fr/~arlot/ANR-DETECT.htm>.  
2008–2010 **Member of the Willow Project** INRIA Paris  
2007–2013 **Member of the European network of excellence Pascal** (Pattern Analysis, Statistical Modelling and Computational Learning) then PASCAL 2 from 2008  
2005–2008 **Member of the Select Project** INRIA Saclay

## Scientific visits

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- Mar. 2012 Università degli Studi di Siena **Duccio Papini**  
Feb. 2011 Scuola Normale Superiore di Pisa **Stefano Marmi**  
Dec. 2009 University of California, Berkeley **Peter L. Bartlett**  
Nov. 2009 Scuola Normale Superiore di Pisa and Università degli Studi di Siena **Stefano Marmi and Duccio Papini**  
Jan.–Apr. 2008 University of California, Berkeley **Peter L. Bartlett**

## Collective responsibilities

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|-----------|---|
| 2021–     | Invited member of the council of the Computer Science Graduate School Université Paris-Saclay     |
| 2018–     | <b>Associate editor</b> Annales de l’Institut Henri Poincaré B, Probability and Statistics        |
| 2016–     | Member of recruiting committees (5 committees since 2016)   |
| 2021      | <b>Area chair</b> AISTATS 2021  |
| 2020–2021 | Member of the temporary council of the Math Graduate School Université Paris-Saclay               |
| 2020–2021 | Member of the executive board (bureau) of LMO Université Paris-Saclay                             |
| 2019–2021 | Member of the prefiguration group of the Computer Science Graduate School Université Paris-Saclay |
| 2019–2020 | Coordinator of the math-AI program Labex Mathématique Hadamard                                    |
| 2019      | President of recruiting committees (1 committee)  |
| 2018–2020 | Executive committee member Fondation Mathématique Jacques Hadamard (FMJH)                         |
| 2016–2019 | Member of steering committee Center for Data Science Paris-Saclay                                 |
| 2016–2019 | Coordinator of the math-CS program Labex Mathématique Hadamard                                    |
| 2012–2015 | Elected member of the laboratory council DI/ENS   |

## Referee

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- **Journals:** Annales de l’ENS, Annales de l’Institut Henri Poincaré, Annals of Statistics, Bernoulli, Computational Statistics and Data Analysis, Electronic Journal of Statistics, IEEE Transactions on Systems, Man and Cybernetics – Part B, IEEE Transactions on Pattern Analysis and Machine Intelligence, Journal of Econometrics, Journal of Machine Learning Research, Journal of the Royal Statistical Society – Series B, Machine learning, Mathematical Methods of Statistics, PNAS, Scandinavian Journal of Statistics, Statistics and Computing, TEST.
- **Conferences:** AISTATS, COLT, ICML, NEURIPS (2019: among the top 400 reviewers over 4500+).
- **Books:** Société Mathématique de France.
- **Mathematical Reviews** (2017–2019).
- **Projects:** Pascal Challenge, Hi! Paris fellowships .

## Member of “Habilitation” committees (HDR)

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| Jan. 2021 | <b>Mohamed Hebiri</b>         | Université Gustave Eiffel       | <b>Examiner</b>  |
| Dec. 2020 | <b>Erwan Scornet</b>          | Institut Polytechnique de Paris | <b>Referee</b>   |
| Sep. 2020 | <b>Guillem Rigail</b>         | Université Paris-Saclay         | <b>Examiner</b>  |
| Sep. 2020 | <b>Victor-Emmanuel Brunel</b> | Institut Polytechnique de Paris | <b>Examiner</b>  |
| Feb. 2019 | <b>Servane Gey</b>            | Université Paris-Descartes      | <b>Referee</b>   |
| Nov. 2018 | <b>Émilie Lebarbier</b>       | Université Paris-Sud            | <b>President</b> |

## Member of Ph.D. committees

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|-----------|------------------------|---------------------------------|-----------------|
| Dec. 2021 | <b>TrungTin Nguyen</b> | Université de Caen Normandie    | <b>Referee</b>  |
| Oct. 2020 | <b>Gautier Appert</b>  | Institut Polytechnique de Paris | <b>Examiner</b> |

Sep. 2020 **Baptiste Barreau** Université Paris-Saclay **Examiner**  
 Dec. 2019 **Solène Thépaut** Université Paris-Sud **President**  
 Dec. 2017 **Jiali Mei** Université Paris-Sud **Examiner**  
 Sep. 2016 **Marie-Liesse Cauwet** Université Paris-Sud **Examiner**  
 June 2016 **Mokhtar Alaya** Université Pierre-et-Marie-Curie **President**  
 May 2016 **Gwenaëlle Mabon** Université Paris Descartes **Examiner**  
 Feb. 2016 **Jérémy Bensadon** Université Paris-Sud **President**  
 Nov. 2015 **Erwan Scornet** Université Pierre et Marie Curie **Examiner**  
 Nov. 2015 **Mélanie Albert** Université Nice Sophia-Antipolis **Examiner**  
 July 2015 **Maud Thomas** Université Paris Diderot **Examiner**  
 Apr. 2011 **Pierre Connault** Université Paris-Sud **Examiner**  
 June 2009 **Matthieu Lerasle** INSA Toulouse **Examiner**

## Advisor

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- **Ph.D. students:**

**Samy Clementz** (2021–...) *Data-driven Early Stopping Rules for saving computation resources in AI* (50%; co-advisor: Alain Celisse)

**El Mehdi Saad** (2019–...) *Interactions between statistical and computational aspects in machine learning* (50%; co-advisor: Gilles Blanchard)

**Tuan-Binh Nguyen** (2018–2021) *Some Contributions to Modern Multiple Hypothesis Testing in High-dimension* (60%; co-advisor: Bertrand Thirion)

**Guillaume Maillard** (2016–2020) *Hold-out and aggregated hold-out* (50%; co-advisor: Matthieu Lerasle)

**Damien Garreau** (2014–2017) *Change-point detection and kernel methods* (80%; co-advisor: Gérard Biau)

**Rémi Lajugie** (2012–2015) *Structured prediction for sequential data* (50%; co-advisor: Francis Bach) Defended on September 18, 2015. **Honorary mention for the Ph.D. thesis award AFRIF 2015**

**Matthieu Solnon** (2010–2013) *Multi-task statistical learning* (50%; co-advisor: Francis Bach) Defended on November 25, 2013

- **Master 2 students:**

**Guillaume Maillard** (2016) *Aggregated cross-validation* (50%; co-advisor: Matthieu Lerasle)

**Damien Garreau** (2013–2014) *Metric learning and dynamic time warping* (50%; co-advisor: Francis Bach)

**Matteo Tanzi** (2013) *Denoising and Parameter Estimation for Deterministic Dynamical Systems* (co-advised with Stefano Marmi)

**Rémi Lajugie** (2012) *Metric learning for change-point detection* (50%; co-advisor: Francis Bach)

**Matthieu Solnon** (2010) *Multi-task learning and minimal penalties* (50%; co-advisor: Francis Bach)

- **Master 1 students:**

**Farid Arthaud** (2021) *Theoretical analysis of purely random forests*

**Anisse Ismaili and Pierre Gaillard** (2009) *The Lasso*

## Talks and organization of scientific events

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- (Co-)organization of 10 one-shot scientific events, and co-organization of monthly seminar (SMILE from 2013 to 2018, Séminaire palaisien since 2019).
- 29 talks in international conferences or workshops (among which 13 abroad),
- 8 talks in national conferences or workshops,
- 44 seminar talks (among which 8 abroad).
- Detailed list available on my webpage: <https://www.imo.universite-paris-saclay.fr/~arlot/>

## Teaching

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- Detailed list available on my webpage: <https://www.math.u-psud.fr/~arlot/teaching.htm>
- **Ph.D. level tutorials:** JES 2016 (Fréjus), CEMRACS 2013 (CIRM, Marseille), Université de Cergy (2012), Scuola Normale Superiore di Pisa (2011), Cours Peccot 2011 (Collège de France, Paris).
- **Master 2:** Statistical learning (Paris-Sud/Saclay, since 2009-10), Seminar coordination (Paris-Sud/Saclay, 2016-17 to 2019-20), Preparation of Mathematics “agregation” (option probability and statistics, Paris-Sud/Saclay, since 2016-17), Supervised classification (Centrale Paris, 2008-09).
- **Master 1:** Mentoring students (M1 math-IA, Paris-Sud/Saclay, since 2019-20), Multivariate statistics (Paris-Sud, M1 Bioinformatic-Biostatistics, 2015-18), Statistical learning (ENS Paris, 2010-12), Mathematical lectures: classification (ENS Paris, 2010-12).
- **Bachelor:** Probability and Statistics (2nd year, Paris-Sud/Saclay, lectures and coordination 2016-17 to 2019-20, practical work 2015-16 to 2019-20), Mathematics board (ENS Paris, 2nd year level, admission exam, section “humanities and economy”, 2010-13), Calculus (1st year, Paris-Sud, practical work, 2005-08).

## Popularization

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| 2019–2021 | <b>Exhibition organized by Fermat Science (Toulouse), IHP (Paris) and MMI (Lyon)</b> member of the steering committee <i>Come into the AI world</i>   |
| 2018      | <b>La Gazette des Mathématiciens – Numéro spécial Jean-Christophe Yoccoz (with Stefano Marmi, Carlos Matheus and Nigel Gilles Yoccoz)</b> Article <i>Dynamique de populations de petits mammifères, saisonnalité et attracteur de Hénon – comment une question d’écologie a pu intéresser Jean-Christophe</i> |
| May 2008  | <b>Le Mensuel de l’Université</b> Article <i>Comment choisir un modèle?</i>   |
| 2005–2008 | <b>Math.en.Jeans</b> Math club for high school students   |
| Apr. 2007 | <b>Science Académie</b> Lecture for high school students <i>Statistiques et Sélection de modèles</i>  |
| 2001–2007 | <b>Forum Sciences TPE</b> Answers to scientific questions from high school students   |
| July 2006 | <b>Festival des Sciences Paris-Montagne</b> <i>Global warming</i>   |

## Academics: Ph.D. thesis and habilitation

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| 2014 | <b>Habilitation in Mathematics</b> Université Paris Diderot <b>Title: Contributions to statistical learning theory: estimator selection and change-point detection.</b> |
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2004–2007 **Ph.D. in Mathematics** Université Paris-Sud **Advisor: Pascal Massart. Title: Resampling and Model selection.** Marie-Jeanne Laurent-Duhamel Ph.D. dissertation award 2011 from the French Statistical Society (SFDS)

## Languages

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French (native)

English (fluent)