

YVES ATCHADÉ — CV

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EDUCATION

Université Nationale du Bénin

DEUG (Math.-Phys.), Benin

Abomey-Calavi

1992–1995

École Nationale de Statistique et d'Économie Appliquée

Diplome d'Ingénieur, Cote d'Ivoire

Abidjan

1995–1998

University of Montreal

PhD, Canada

Montreal

2000–2003

Harvard University

Postdoc, USA

Cambridge

2003–2004

APPOINTMENTS

1. **Boston University. Department of Mathematics and Statistics, and Faculty of Computing and Data Sciences.**
2018-present, Professor.
2. **University of Michigan, Ann Arbor. Department of Statistics.**
2012-2018, Associate Professor.
2006-2012 Assistant Professor.
3. **University of Ottawa. Department of Mathematics and Statistics.**
2004-2006: Assistant Professor of Statistics.

RESEARCH INTERESTS

Bayesian inference, Markov Chain Monte Carlo methods, inverse problems, partially observed processes, statistical methods in environmental sciences.

AWARDS AND HONORS

- Elected Fellow, Institute of Mathematical Statistics (IMS), 2020.
- Prix Carl-Herz 2003, Université de Montreal.
- NSERC (Canada) Postdoctoral Fellowship (2003-2004).
- NSERC (Canada) Postgraduate Fellowship (2002-2003).

STUDENTS

PHD Students.....

Yuke Zhang: Phd Student. Thesis: "TBD".

Lucia Vilallonga: Phd Student. Thesis: "TBD".

Tianrui Hou: (phd candidate). Thesis: "TBD".

Xinru Liu: (phd candidate). Thesis: "Topics in deep reinforcement learning".

Yi Sun: (phd candidate). Thesis: "Towards deep learning models for remote sensing".

Qiuyun Zhu: (graduated Jun. 2023). Thesis: "On Bayesian GANs".

Liwei Wang: (graduated Aug. 2023). Thesis: "Topics in sparse Bayesian machine learning".

Keer Jiang: (graduated Aug. 2022). Thesis: "Topics in sparse Bayesian machine learning".

Anwasha Battacharyya: (graduated May 2020). Thesis: "Topics in high-dimensional Bayesian inference and computation".

Jun Guo: (graduated May 2018). Thesis: "Some Contributions to High Dimensional Mixed-effects Logistic Regression Models".

Chia Chye Yee: (graduated Aug. 2016) Thesis: "Some contributions to sparse Bayesian estimation with application to hyperspectral imaging".

Sandipan Roy: (graduated April 2015). Jointly with George Michailidis. Thesis: "Dynamic high-dimensional network estimation".

Jing Wang: (graduated April 2011). Thesis: "Approximate Sampling for Doubly-Intractable Distributions and Modeling Choice Interdependence in a Social Network". Jointly with Anocha Aribarg, Ross Business School.

Yang Yang: (graduated April 2011). Thesis: "Contributions to the Analysis of Multistate and Degradation Data". Jointly with Vijay Nair.

Postdoc fellows.....

Indrajit Kalita: (2023-current)

Joonha Park: (2018-2020). Now at the University of Kansas, Lawrence.

Gautam Sabnis: (2017-2019) Now at Jackson Laboratories, Bar Harbor.

Masters and honor undergraduate students.....

Lucia Vilallonga: Master Student. Summer and Fall 2023.

Andrew Furlong: (undergrad, CMU), summer 2019. "Exploring the Safecast dataset".

Ao Wang: (undergrad), fall 2017. "Statistical modeling of particulate matters measurements".

Tianyou Luo: (undergrad, Pekin University), Summer 2017. "Space-time filtering".

Jingxue Xu: (undergrad), fall 2016. "Exploring MODIS Africa data".

Joseph Leland Bybee: (master), summer and Fall 2016. "Computational aspects of high-dimensional change point models".

Miao Wang: (undergrad), Winter 2016. "Some numerical experiments with response driven

sampling methods”.

Yusheng Jiang: (undergrad), Summer 2016. “Proximal gradient algorithms for g-lasso”.

Weiqing Yu: (master), summer 2015. “A C++ implementation of the Moreau-Yosida approximation”.

Avery Wu: (undergrad), Summer 2014. “Estimation of soil carbon stocks in African countries”.

FUNDING

NSF-DMS-2210664: (PI Atchadé, 2022-2025). “New Statistical methods for computer-assisted inverse problems with applications to satellite remote sensing”. Funded amount: \$365,262.

NSF-DMS 2015485: (PI Atchadé, 2020-2024). “Advancing high-dimensional Bayesian asymptotics and computation”. Funded amount: \$160,000.

NSF-DMS 1513040: (PI Atchadé, 2015-2019). “High-dimensional Bayesian computations: the Moreau-Yosida approximation”. Funded amount: \$358,449.

University of Michigan LSA APSF: (PI, Atchade 2015-2017), “High-dimensional Bayesian computations: the Moreau-Yosida approximation”. Funded amount: \$93,973.

NSF-DMS 130891: Grant (PI Ionides, Co-PI Atchadé, 2013-2016). “Iterated filtering: New theory, algorithms and applications”. Funded amount: \$100,000.

NSF-SES 1229261: (PI Schilling, Co-PI Atchadé, 2012-2015). “Faster Mixing Markov Chain Monte Carlo for Multidimensional IRT and Cognitive Diagnosis Models”. Funded amount: \$196,000.

NSF-DMS 1228164: (PI Michailidis, Co-PI Atchadé, 2012-2015). “Statistical modeling and computations for data with network structure”. Funded amount: \$450,000.

NSF-DMS 0906631: (PI Atchadé, 2009-2012) “Adaptive Markov Chain Monte Carlo methods”. Funded amount: \$99,556.

University of Michigan Rackham Grant: (PI Atchadé, 2007-2008). “Phylogenetic inference using models of sequence evolution that incorporates proteins tertiary structure”. Funded amount: \$15,000.

NSERC (CANADA): (PI Atchadé, 2004-2006). Adaptive Markov Chain Monte Carlo: Methodology, Theory and Applications.

PUBLICATIONS

TECHNICAL REPORTS.....

1. Y. Sun, D. Mukherjee, and Y. Atchade. *On the estimation rate of Bayesian PINN for inverse problems*. Submitted.
2. T. Hou, L. Wang and Y. Atchade *Laplace approximation for Bayesian variable selection via Le Cam’s one-step procedure*. Submitted.
3. P. Jacob, and Y. Atchade (2023). *Unbiased MCMC: What, why and how*. Technical

Report.

4. Y. Atchade, X. Liu and Q. Zhu *A statistical perspective on algorithm unrolling models for inverse problems*. Submitted.
5. Y. Atchadé and P. Dovonon, (2019). *Bayesian variable selection in linear regression models with instrumental variables*. (arXiv:1901.03182).
6. Y. Atchadé, A. Bhattacharyya (2019). *An approach to large-scale quasi-Bayesian inference with spike-and-slab priors*, (arXiv:1803.10282).

PEER-REVIEWED PUBLICATIONS.....

1. L. Wang, X. Liu, A. Smith, and Y. Atchade (2024). *On cyclical MCMC sampling*. AISTATS 2024.
2. P. Dovonon, Y. Atchade, and F. Tchatoka (2024). *Efficiency bounds for moment condition models with mixed identification strength*. Journal of Econometrics (to appear).
3. Alexander Lin, Bahareh Tolooshams, Y. Atchadé and Demba Ba (2023). *Probabilistic Unrolling: Scalable, Inverse-Free Maximum Likelihood Estimation for Latent Gaussian Models*. ICML 2023.
4. Qiuyun Zhu and Y. Atchadé (2023). *Minimax quasi-Bayesian estimation in sparse canonical correlation analysis via a Rayleigh quotient function*. JASA (to appear).
5. Y. Atchadé and L. Wang (2023). *A fast asynchronous MCMC sampler for sparse Bayesian inference*. JRSS-B 85, pages 1492-1516.
6. Y. Atchadé (2021). *Approximate spectral Gaps for Markov chains mixing times in high dimensions*. (SIAM Journal on Mathematics of Data Science 3, 854-872; arXiv:1903.11745).
7. Joonha Park and Y. Atchadé (2020). *Markov chain Monte Carlo algorithms with sequential proposals*. Statistics and Computing 30, 1325–1345. (arXiv:1907.06544).
8. D. Nguyen, P. de Valpine, Y. Atchadé, D. Turek, N. Michaud, C. Paciorek (2020). *Nested adaptation of MCMC algorithms*, Bayesian Analysis 15 (4) 1323 - 1343.
9. Y. Atchadé and P. Dovonon (2020). *Efficiency bounds for semiparametric models with singular score functions*. Econometric Review 39, 612-648.
10. P. Jacob, J. O’Leary, and Y. Atchadé (2020). *Unbiased Markov chain Monte Carlo with couplings*, JRSS-B 82: 543-600. with discussion.
11. H. Keshavarz, G. Michailidis, and Y. Atchadé (2020). *Sequential change-point detection in high-dimensional Gaussian graphical models*, JMLR 21 (82), 1-57.
12. S. Roy, Y. Atchadé, and G. Michailidis (2019). *Likelihood Inference for Large Scale Stochastic Blockmodels with Covariates based on a Divide-and-Conquer Parallelizable Algorithm with Communication*. JCGS 3, vol 28.
13. Y. Atchadé (2019). *Quasi-Bayesian estimation of large Gaussian graphical models*. Journal of Multivariate Analysis 173, 656-671.
14. G. Fort, L. Risser, Y. Atchadé, and E. Moulines (2018), *Stochastic Fista Algorithms: So Fast ?* Proceedings of the 2018 IEEE Statistical Signal Processing Workshop (SSP), 796-800.
15. L. Bybee and Y. Atchadé (2018) *Change-point computation for large graphical models: a scalable algorithm for Gaussian graphical models with change-points*. JMLR 19, 440-477.
16. Y. Atchadé (2017) *On the contraction properties of some high-dimensional quasi-posterior distributions*. Annals of Statistics 45, 2248-2273.

17. S. Roy, Y. Atchadé, and G. Michailidis (2017). Change-point estimation in high-dimensional Markov random field models. *JRSS-B* 79, 1187-1206.
18. Chia Chye Yee and Y. Atchadé (2017). *On the sparse Bayesian learning of linear models*. *Communications in Statistics – Theory and Methods* 46, 7672-7691.
19. Y. Atchadé and G. Fort, and E. Moulines (2017). *On stochastic proximal gradient algorithms*. *JMLR* 18(10), 1-33.
20. Y. Atchadé (2016). *Markov Chain Monte Carlo Confidence Intervals*. *Bernoulli* Vol. 22, No3, 1808-1838.
21. A.-M. Lyne, M. Girolami, Y. Atchadé, H. Strathmann, and D. Simpson (2015). *On Russian Roulette Estimates for Bayesian inference with doubly-intractable Likelihoods*. *Statistical Science* Vol. 30, No. 4, 443-467.
22. Y. Atchadé and Yizao Wang (2015). *On the Convergence Rates of Some Adaptive Markov Chain Monte Carlo Algorithms*. *Journal of Applied Probability* 2015, Vol. 30, No. 4, 443-467.
23. E. L. Ionides, D. Nguyen, Y. Atchadé, S. Stove, and A. King (2015). *Inference for dynamic and latent variable models via iterated, perturbed Bayes maps*. *Proceedings of the National Academy of Science* 112 (3) 719-724.
24. Y. Atchadé (2014). *Estimation of network structures from partially observed Markov random fields*. *Electronic Journal of Statistics*, Vol. 8, N. 2, 2242–2263.
25. Y. Atchadé and M. D. Cattaneo (2014). *A martingale decomposition for quadratic forms of Markov chains (with applications)*. *Stochastic Processes and their Applications*, Vol. 124, Issue 1, Pages 646-677.
26. Y. Atchadé and G. Michailidis (2014). *Discussion of the paper "A Brief Survey of Modern Optimization for Statisticians"*. *International Statistical Review* (2014), 82, 1, 71-75.
27. J. Wang and Y. Atchadé (2014). *Bayesian inference of exponential random graph models for large social networks*. *Communications in Statistics - Simulation and Computation*, Vol. 43, Issue 2, 359-377.
28. J. Wang, A. Aribarg and Y. Atchadé (2013). *Modeling choice interdependence in a social network*. *Marketing Sciences*, Volume 32 Issue 6, November-December 2013, pp. 977-997.
29. Y. Atchadé, N. Lartillot and C. P. Robert (2013). *Bayesian computation for statistical models with intractable normalizing constants*. *Brazilian Journal of Probability and Statistics*. Vol. 27, Number 4 (2013), 416-436.
30. Y. Atchadé and G. Fort (2012). *Limit theorems for some classes of adaptive MCMC algorithms with sub-geometric kernels: Part II*. *Bernoulli*, Vol. 18, 975-1001.
31. E. L. Ionides, A. Bhadra, Y. Atchadé and A. King (2011). *Iterated Filtering*. *Annals of Statistics* Vol. 39, 1776-1802.
32. Y. Atchadé, G. Fort, E. Moulines and P. Priouret (2011). *Adaptive Markov Chain Monte Carlo: Theory and Methods*. Book Chapter in "Bayesian Time Series Models", Cambridge University Press, page 32-51.
33. Y. Atchadé, J. S. Rosenthal and G. O. Roberts (2011). *Towards optimal Scaling of Metropolis-Coupled Markov Chain Monte Carlo*. *Statistics and Computing* Vol. 21, No 4, 555-568.
34. Y. Atchadé (2011). *A computational framework for empirical Bayes inference*. *Statistics*

- and Computing Vol. 21, No 4, 463-473.
35. Y. Atchadé (2011). *Kernel estimators of asymptotic variance for adaptive Markov Chain Monte Carlo*. Annals of Statistics Vol. 39, No 2, 990-1011.
 36. Y. Atchadé (2010). *A cautionary tale on the efficiency of some adaptive Monte Carlo schemes*. Annals of Applied Probability Vol. 20, No. 3, 841-868.
 37. Y. Atchadé and G. Fort (2010). *Limit theorems for some classes of adaptive MCMC algorithms with sub-geometric kernels*. Bernoulli Vol. 16, 116-154
 38. Y. Atchadé and J. S. Liu (2010). *The Wang-Landau algorithm for Monte Carlo computation in general state spaces*. Statistica Sinica Vol. 20, 209-233.
 39. Y. Atchadé (2009). *Resampling from the past to improve on MCMC samplers*. Far East Journal of Theor. Statist. Vol. 27, Issue 1, 81-99.
 40. C. Andrieu and Y. Atchadé (2007). *On the efficiency of some adaptive MCMC algorithms*. Elect. Comm. In Probab. Vol. 12, 336-349.
 41. Y. Atchadé and F. Perron (2007). *On the Geometric Ergodicity of the Metropolis-Hastings Algorithm*. Statistics Vol. 41, 77-84.
 42. Y. Atchadé and J. S. Liu (2006). *Discussion of the "Equi-Energy sampler"*. Annals of Statistics Vol. 34, No. 4, 1620-1628.
 43. Y. Atchadé (2006). *An adaptive version for the Metropolis adjusted Langevin algorithm with a truncated drift*. Methodol. and Comput. in Applied Probab. Vol. 8, 235-254.
 44. Y. Atchadé and J. S. Rosenthal (2005). *On Adaptive Markov Chain Monte Carlo Algorithms*. Bernoulli Vol. 11, 815-828.
 45. Y. Atchadé and F. Perron (2005). *Improving on the Independent Metropolis-Hastings Algorithm*. Statistica Sinica Vol. 15, 3-18.

EDITORIAL AND PROFESSIONAL SERVICE

Associate Editor: JCGS, (2024-2026).

Associate Editor: JASA, (2023-2025).

Associate Editor: Bernoulli, (2022-2025).

Associate Editor: Harvard Data Science Review (HDSR), (2020-2024).

IMS committees: 2023-2024 IMS Fellows Committee (chair), 2021-2023 IMS Fellows Committee; 2021-2022 IMS Committee on Nominations (ex-officio); 2020-2021 IMS Committee on Nominations (chair); 2019-2020 IMS Committee on Nominations; 2018-19 IMS Committee for IMS Monographs and Textbooks Editor.

ISBA committee: 2021 ISBA Blackwell-Rosenbluth Award committee.

Harriri Institute: 2021 DEI Committee (co-chair).

NSF review panel: NSF Review Panels (2013, 2016, 2019, 2022, 2023).

NextProf Science committee: Workshop for fostering diversity in science. The University of Michigan (2016, 2017, 2018).

External reviewer for probability and statistics journals (recent): Annals of Applied Probability, Annals of Statistics, Bernoulli, Electronic Journal of Statistics, JASA, Journal of financial Econometrics, JRSS-B, JCGS, MCAP, Statistica Sinica, Statistics and Computing.

Summer seminar series: Université Paris-Est, Paris, France (Jun. 2010). On Adaptive

Markov Chain Monte Carlo.

Summer mini-course: At the *Institut de Recherche en Economie Empirique et Politique* (IREEP, www.ireep.org), Cotonou, Benin. Course title: "Methodes Computationelles en Statistique". Summer 2004, 2005, 2006, Spring 2007, 2008.

RECENT INVITED TALKS

- Invited department colloquium speaker: **Texas AM**, November 2023; **Brown University**, Oct 2023; **University of Chicago**, Mar. 2021; **University of Kansas Lawrence**, Dec. 2020; **University of Pennsylvania**, Nov. 2020; **Harvard University**, Sept. 2020; **Purdue University**, Nov. 2019; **UMass Amherst** Oct. 2019; **Stanford University** May 2019; **ENSEA-Abidjan** (Nov. 2018); **Georgia Tech** (Mar. 2018), **University of Toronto** (Mar. 2017), **Boston University** (Mar. 2017), **University of Wisconsin** (Feb. 2017), **University of Florida** (Nov. 2016), **Harvard University** (Nov. 2016), **University of Minnesota** (Oct. 2016), **Ohio State University** (Nov. 2015), **Rice University** (Sept. 2014), **NeuroStat Seminar Columbia University** (Oct. 2013), **BigMC Seminar series IHP Paris France** (Mar. 2013), **Probability seminar Cornell University** (Jan. 2013), **CIREQ Concordia University, Montreal** (May 2012), **University of Illinois Urbana-Champaign** (Aug. 2011), **Colorado State University** (March 2011), **University of Florida** (March 2011), **Big MC Seminar Series IHP Paris** (Jun. 2010), **University of Iowa** (Oct. 2009), **University of Montreal** (Apr. 2008), **University of British Columbia** (Oct. 2006), **UC Davis** (March 2006).
- Invited conference speaker: **OCE Conference 2024**, University of Chicago, June 2024; **African Econometric Society Meeting**, Nairobi, June 2023; **JSM 2022 Virtual**, Aug. 2021; **MCQMC 2020 Virtual**, Aug. 2020, **Plenary speaker**; **2018 Symposium on Statistics and Data Science** May 2018, Reston, VA; **2017 SAMSI Workshop On Monte Carlo Methods** Duke University Dec. 2017; **5th Workshop on Cognition and Control** University of Florida, Jan. 2017, **New challenges for New Data in Economics and Finance**, University of Toronto, Toronto, Nov. 2016, **Estimating normalizing constants**, University of Warwick, Coventry, UK, April 2016, **MCQMC 2014**, Leuven, Belgium, April 2014, **MCQMC 2012**, Sydney, Australia, Feb. 2012., **ISBA 2012**, Kyoto, Japan, July 2012., **Information Theory and Applications (ITA 2011)**, UC San Diego; **AdapSki 2011** ParkCity, Utah; **textbfMarkov chain Monte Carlo and related methods** 2009, Warwick, UK; **Optimisation of MCMC Algorithms 2009**, Warwick, UK; **JSM 2008**, Denver, Colorado; **ISBA 2008**, Hamilton Island, Australia; **Bayesian Inference for High-Dimensional data 2008**, Warwick, UK; **Adapski 2008**, Bormio Italy; **Third Workshop on Monte Carlo methods 2007**, Harvard University; **JSM 2007**, Salt Lake City; **JSM 2006**, Seattle.