
VERONIKA ROČKOVÁ

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CONTACT INFORMATION

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RESEARCH INTERESTS

Bayesian statistics, variable selection, machine learning, scalable Bayes for massive data, non-parametric Bayes, frequentist assessments of Bayesian procedures, high-dimensional inference, sparse techniques in multivariate analysis, non-convex optimization and penalized likelihood methods

PROFESSIONAL EXPERIENCE

UNIVERSITY OF CHICAGO, Chicago, USA

Booth School of Business

- Professor in Econometrics and Statistics, 7/2022-present
- Associate Professor in Econometrics and Statistics, 7/2020-6/2022
- Assistant Professor in Econometrics and Statistics, 7/2016-7/2020

Department of Statistics

- Affiliate Faculty, 1/2023-present

Committee on Quantitative Methods in Social, Behavioral, and Health Sciences

- Faculty Member, 1/2020-present

Center for Applied AI at the Booth School of Business

- Faculty Steering Committee Member, 9/2020-present

Committee on Data Science

- Faculty Member, 10/2023-present

UNIVERSITY OF PENNSYLVANIA, Philadelphia, USA

The Wharton School, Department of Statistics

- Postdoctoral Research Associate, 9/2013-7/2016

EDUCATION

ERASMUS UNIVERSITY, Rotterdam, The Netherlands

Erasmus Medical Centre

- Ph.D., Biostatistics, 9/2009-11/2013

CHARLES UNIVERSITY, Prague, Czech Republic

School of Mathematics and Physics, Department of Probability and Mathematical Statistics

- M.Sc., Mathematical Statistics, 9/2007-6/2010
- B.Sc., General Mathematics, 9/2004-6/2007

UNIVERSITEIT HASSELT, Hasselt, Belgium

School of Sciences, Centre for Statistics

- M.Sc., Biostatistics, 9/2008-9/2009

HONORS AND AWARDS

- **COPPS Emerging Leader Award 2023** for groundbreaking contributions to theory and methodology at the intersection of Bayesian and frequentist statistics, for outstanding editorial service to the profession, and for excellence in the advising and supervision of doctoral students.
- **NSF CAREER Award, 2020-2025 (400 K)**

- James S. Kemper Foundation Faculty Scholar, University of Chicago, 7/2016-present.
- Susie Bayarri Lecturer, 7/2018. This lecture is delivered at the International Society for Bayesian Analysis (ISBA) World Meetings by an outstanding young researcher under 35 years of age.
- First Honorable Mention (runner up) for the 2014 Leonard J. Savage Award for outstanding dissertation in Bayesian statistical theory and methods awarded by ISBA.
- Erasmus University: Graduated with “Cum Laude” (awarded annually to 5/200 graduate students)

SELECTED WORK

IN PROGRESS

* *designates a student*

- Deep Bayes Factors.
Kim, J. and Rockova, V. (2023)
In Preparation
- Reinforcement Learning ABC.
O’Hagan, S. and Rockova, V. (2023)
In Preparation
- Assessments of Healthcare Equity from Medicare Records.
Park, J., Li, J., Adelman, D., Spiegel, T. and Rockova, V. (2023)
In Preparation

SUBMITTED WORK

- Adaptive Bayesian Predictive Inference.
Rockova, V. (2023)
The Annals of Statistics (Under Review)
- Sparse Bayesian Multivariate Item Response Theory.
Li, J., Gibbons, R. and Rockova, V. (2023)
Journal of the American Statistical Association (Under Review)
- On Mixing Rates for Bayesian CART.
Kim, J. and Rockova, V. (2023)
Journal of the American Statistical Association (Under Review)
- Adversarial Bayesian Simulation.
Wang Y.* and Rockova, V. (2022)
Journal of Machine Learning Research (Under Review)
- The Art of BART: On Flexibility of Bayesian Forests.
Jeong, S. and Rockova, V. (2020)
Journal of Machine Learning Research (Revision Submitted)

PUBLICATIONS

- Ideal Bayesian Spatial Adaptation.
Rockova, V. and Rousseau, J. (2023)
Journal of the American Statistical Association (In press)
- Generative Bootstrap for Bayesian Computation.
Nie L.* and Rockova, V. (2023)
Philosophical Transactions of the Royal Society (In press)

- Approximate Bayesian Computation via Classification.
Wang, Y.* , Kaji, T. and Rockova, V. (2023)
Journal of Machine Learning Research (In press)
- Metropolis-Hastings via Classification.
Kaji, T. and Rockova, V. (2022)
Journal of the American Statistical Association (In press)
- Bayesian Bootstrap Spike-and-Slab LASSO.
Nie, L.* and Rockova, V. (2022)
Journal of the American Statistical Association (In press)
- Uncertainty Quantification for Bayesian CART.
Castillo, I. and Rockova, V. (2021)
The Annals of Statistics, 49(6), 3482–3509
- Adaptive Bayesian SLOPE: Model Selection with Incomplete Data.
Jiang, W.* , Bogdan, M., Josse, J., Miasojedow, B., Majewski, S., Rockova, V. and TraumaBase[®] Group (2022)
Journal of Computational and Graphical Statistics , 31, 113–137
- Variable Selection via Thompson Sampling.
Liu, Y.* and Rockova, V. (2021)
Journal of the American Statistical Association (In Press)
Winner of SBSS 2020 Student Paper Competition awarded by ASA
- Variable Selection with ABC Bayesian Forests.
Liu, Y.* , Rockova, V. and Wang, Y.* (2021)
Journal of the Royal Statistical Society (Series B), 83(3), 453–481
- The Median Probability Model and Correlated Variables.
Barbieri, M., Berger, J., George, E. and Rockova, V. (2021)
Bayesian Analysis, 16(4): 1085–1112
- Dynamic Variable Selection with Spike-and-Slab Process Priors.
Rockova, V. and McAlinn, K. (2021)
Bayesian Analysis, 16(1), 233 –269
- Spike-and-Slab LASSO Biclustering.
Moran, G.* , Rockova, V. and George, E. (2021)
The Annals of Applied Statistics, 15(1), 148–173
- Posterior Concentration for Bayesian Regression Trees and Forests.
Rockova, V. and van der Pas, S. (2020)
The Annals of Statistics, 48(4), 2108–2131
- Spike-and-Slab Meets the LASSO: A Review of the Spike-and-Slab LASSO.
Bai, R., Rockova, V. and George, E. (2020)
Handbook on Bayesian Variable Selection (In Press)
- On Semiparametric Inference for BART.
Rockova, V. (2020)
37th International Conference on Machine Learning (ICML), 119, 8137–8146

- Uncertainty Quantification for Sparse Deep Learning.
 Wang, Y.* and Rockova, V. (2020)
23rd Conference on Artificial Intelligence and Statistics (AISTATS), 108, 298–308
- Determinantal Priors for Bayesian Variable Selection.
 Rockova, V. and George, E. (2020)
Statistics in the Public Interest—In Memory of Stephen E. Feinberg (In Press)
- Regularization via Bayesian Penalty Mixing.
 Comment on *Ridge Regularization: An Essential Concept in Data Science* by Trevor Hastie
 George, E. and Rockova, V. (2020)
Technometrics, 62(4), 438–442
- On Theory for BART.
 Rockova, V. and Saha, E.* (2019)
22nd Conference on Artificial Intelligence and Statistics (AISTATS), 89, 2839–2848
- Simultaneous Variable and Covariance Selection with the Multivariate Spike-and-Slab LASSO.
 Deshpande, S.*, Rockova, V. and George, E. (2019)
Journal of Computational and Graphical Statistics, 18(4), 921–931
- On Variance Estimation for Bayesian Variable Selection.
 Moran, G.*, Rockova, V. and George, E. (2019)
Bayesian Analysis, 14(4), 1091–1119
- Bayesian Estimation of Sparse Signals with a Continuous Spike-and-Slab Prior.
 Rockova, V. (2018)
The Annals of Statistics, 46(1), 401–437
- Particle EM for Variable Selection.
 Rockova, V. (2018)
Journal of the American Statistical Association, 113(524), 1684–1697
- Posterior Concentration for Sparse Deep Learning.
 Polson, N. and Rockova, V. (2018)
32nd Annual Conference on Neural Information Processing Systems (NeurIPS)
- The Spike-and-Slab LASSO.
 Rockova, V. and George, E. (2018)
Journal of the American Statistical Association, 113(521), 431–444
- Bayesian Dyadic Trees and Histograms for Regression.
 van der Pas, S. and Rockova, V. (2017)
31st Annual Conference on Neural Information Processing Systems (NeurIPS)
- Hospital Mortality Rate Estimation for Public Reporting.
 George, E., Rockova, V., Rosenbaum, P., Satopaa, V. and Silber, J. (2017)
Journal of the American Statistical Association, 112(519), 933–947
 Featured in Chicago Booth Review (spring 2018)
- Fast Bayesian Factor Analysis via Automatic Rotations to Sparsity.
 Rockova, V. and George, E. (2016)
Journal of the American Statistical Association, 111(506), 1608–1622

- Bayesian Penalty Mixing: The Case of a Non-separable Penalty.
Rockova, V. and George, E. (2016)
Statistical Analysis for High-Dimensional Data - The Abel Symposium 2014 Springer Series
- Improving Medicare's Hospital Compare Mortality Model.
Silber, J., Satopaa, V., Mukherjee, N., Rockova, V., Wang, W., Hill, A., Even-Shoshan, O., Rosenbaum, P., and George, E. (2016)
Health Services Research Journal, 51(2), 1229-1247
- Determinantal Regularization for Ensemble Variable Selection.
Rockova, V., Moran, G.* and George, E. (2016)
19th Conference on Artificial Intelligence and Statistics (AISTATS) 2016
- EMVS: The EM Approach to Bayesian Variable Selection.
Rockova, V. and George, E. (2014)
Journal of the American Statistical Association, 109(506), 828-846
- Negotiating Multi-collinearity with Spike and Slab Priors.
Rockova, V. and George, E. (2014)
Metron, 72(2), 217-229
- Incorporating Grouping Information in Bayesian Variable Selection with Applications in Genomics.
Rockova, V. and Lesaffre, E. (2014)
Bayesian Analysis, 9(1), 221-258
- Bayesian Hierarchical Formulations for Selecting Variables in Regression Models.
Rockova, V., Lesaffre, E., Luime, J. and Löwenberg, B. (2012)
Statistics in Medicine, 31(11), 1221-1237

CONFERENCE
PROCEEDINGS

- Fast EM Inference for Bayesian Factor Analysis with Indian Buffet Process Prior.
Rockova, V. and George, E. (2014)
47th Scientific Meeting of Italian Statistical Society
- Dual Coordinate Ascent EM for Bayesian Variable Selection.
George, E., Rockova, V. and Lesaffre, E. (2013)
28th International Workshop in Statistical Modeling, ISBN: 978-88-96251-47-8, 165-171
- Sparse Bayesian Factor Regression Approach to Genomic Data Integration.
Rockova, V. and Lesaffre, E. (2013)
28th International Workshop in Statistical Modeling, ISBN: 978-88-96251-47-8, 337-343
- Incorporating Prior Biological Knowledge in Bayesian Modeling of Sparse Networks.
Rockova, V. and Lesaffre, E. (2012)
27th International Workshop in Statistical Modeling, ISBN: 978-80-263-0250-6, 291-296

BIOMEDICAL
PUBLICATIONS

- Risk-stratification of Intermediate-risk Acute Myeloid Leukemia: Integrative Analysis of a multitude of gene mutation and expression markers.
Rockova, V., Abbas, S., Wouters, B., Erpelincx, C., Beverloo, B., Delwel, R., van Putten, W., Löwenberg, B. and Valk, P.

Blood (2011), 118(4), 1069-1076

- The Prognostic Relevance of miR-212 Expression with Survival in Cytogenetically and Molecularly Heterogeneous AML.
Sun, S., Rockova, V., Bullinger, L., Dijkstra, M., Döhner, H., Löwenberg, B., Lavrencic, M.
Leukemia (2013), 27(1), 100-106
- Mutant DNMT3A: a Marker of Poor Prognosis in Acute Myeloid Leukemia.
Ribeiro, A., Pratcorona, M., Erpelinck, C., Rockova, V., Sanders, M., Abbas, S., Figueroa, M., Zeilemaker, Z., Melnick, A., Löwenberg, B., Valk, P. and Delwel, R.
Blood (2012), 119(24), 5824-5831
- Retroviral Integration Mutagenesis in Mice and Comparative Analysis in Human AML Identify Reduced PTP4A3 Expression as a Prognostic Indicator.
Beekman, E., Valkhof, M., Erkeland, S., Taskesen, E., Rockova, V., Peeters, J., Valk, P., Löwenberg, B. and Touw, I.
PLoS ONE (2011), 6(10), e26537
- Deregulated Expression of EVI1 Defines a Poor Prognostic Subset of MLL-Rearranged Acute Myeloid Leukemias.
Groschel, S., Schlenk, R., Engelmann, J., Rockova, V., Teleanu, V., Kühn, M., Eiwen, K., Erpelinck, C., Havermans, M., Lubbert, M., Germing, U., Schmidt-Wolf, I., Beverloo, B., Schuurhuis, G., Bargetzi, M., Krauter, J., Ganser, A., Valk, P., Löwenberg, B., Döhner, K., Döhner, H. and Delwel, R.
Journal of Clinical Oncology (2013), 31(1), 95-103

INVITED
SEMINAR TALKS

- University of Chicago (Committee on Quantitative Methods Seminar) 12/2022
- Michigan State University, Department of Statistics 1/2022
- Clemson University, Department of Statistics 2/2022
- University of Warwick, One World ABC Seminar 5/2021
- Stanford University, Department Statistics 3/2021
- Wharton, Department Statistics 2/2021
- University of Amsterdam, The Bayes Club 2/2021
- University of Oxford, Department Statistics 2/2021
- University of Lancaster, Department Statistics 1/2021
- University of Massachusetts, Department of Mathematics and Statistics 11/2020
- University of Bristol, Department of Statistical Science 10/2020
- Princeton, Operations Research and Financial Engineering 2/2020
- University of Cambridge, Department of Statistics 11/2019
- University of Oxford, Department of Statistics 11/2019
- Ohio State, Department of Statistics 10/2019
- Texas A&M, Department of Statistics 3/2019
- University of Chicago, Machine Learning Seminar 2/2019
- Michigan State University, Department of Statistics 1/2019
- University of Chicago,
Workshop on Quantitative Methods in Education, Health and Social Sciences 1/2019
- Vienna University of Economics and Business 12/2018
- University of Florida, Department of Statistics 10/2018
- Argonne Labs 10/2018
- Princeton, Center for Statistics and Machine Learning 2/2018
- ENSAE ParisTech, Center for Research in Economics and Statistics 1/2018
- Sorbonne Université, Laboratoire de Probabilités, Statistique et Modélisation 1/2018
- Wharton, Department of Statistics 11/2017
- University of Washington (*Microsoft Distinguished Talk*), Department of Statistics 10/2017

- University of Michigan, Department of Biostatistics 9/2017
- Leiden University, Institute of Mathematics 2/2017
- Federal Reserve Bank of Cleveland 9/2016
- Yale University, Department of Statistics 2/2016
- Stanford University, Department of Statistics 2/2016
- Columbia University, Department of Statistics 2/2016
- Carnegie Mellon University, Department of Statistics 2/2016
- The University of Texas at Austin, Department of Statistics 1/2016
- Boston University, Department of Mathematics and Statistics 1/2016
- MIT, Sloan School of Business 1/2016
- University of Chicago, Booth School of Business 1/2016
- University of Chicago, Department of Statistics 1/2016
- Duke University, Department of Statistical Science 1/2016
- Harvard University, Department of Biostatistics 1/2016
- Johns Hopkins University, Department of Biostatistics 12/2015
- University of Pennsylvania, Department of Biostatistics 12/2015
- Harvard University, Department of Statistics 11/2015
- University of Pennsylvania, Department of Economics, Econometrics Workshop 11/2014
- Duke University, Department of Statistical Science 10/2014
- University of Toronto, Department of Statistical Sciences 3/2014
- Johns Hopkins University, Department of Biostatistics, SMART colloquium 1/2014
- Rice University, Department of Statistics 10/2013
- University of Pennsylvania, Department of Statistics 10/2012

INVITED
CONFERENCE
TALKS

- 2022 IMS International Conference on Statistics and Data Science (ICSDS) Florence, 12/2022
- BASICS Workshop Paris, 9/2022
- Objective Bayes Conference Santa Cruz, 9/2022
- R-Finance Conference (Keynote lecture) Chicago, 6/2022
- Joint Statistical Meeting Online, 8/2021
- ISBA World Meeting Online, 7/2021
- Oberwolfach Workshop on *Mathematical Foundations of Machine Learning* Online, 3/2021
- Joint Statistical Meeting (*IMS Invited Lecture*) Online, 8/2020
- Mathematical Methods of Modern Statistics (MMMS2), Luminy Conference Online, 6/2020
- ENAR Spring Meeting Online, 4/2020
- CQA (Chicago Quantitative Alliance) Chicago, 9/2019
- 10th European Seminar on Bayesian Econometrics (*Keynote Lecture*) St. Andrews, 9/2019
- Workshop on Higher Order Asymptotics and Post-selection Inference St. Louis, 8/2019
- SAMSI Opening Workshop on Deep Learning Duke, 8/2019
- BFF (Bayesian, Fiducial & Frequentist) Meeting Duke, 5/2019
- Joint Statistical Meeting (*IMS Invited Lecture*) Denver, 8/2019
- Statistics and Data Science Symposium (UCSD) San Diego, 1/2019
- Young Researchers Conference (Wharton, University of Pennsylvania) Philadelphia, 11/2018
- Fields Institute in Toronto
Statistical Inference, Learning and Models in Data Science Workshop Toronto, 9/2018
- Suzie Bayarri Lecture at ISBA World Meeting (*Keynote Named Lecture*) Edinburgh, 7/2018
- EBEB XIV (*Plenary Speaker*) 14th Encontro Brasileiro de Estatística Bayesiana Rio de Janeiro, 3/2018
- 11th International Conference on Computational and Financial Econometrics London, 12/2017
- 12th International Workshop on Objective Bayes Methodology Austin, 12/2017
- Joint Statistical Meeting: *IMS Lecture* Baltimore, 8/2017
- 31st European Meeting of Statisticians Helsinki, 7/2017
- 11th Conference on Bayesian Nonparametrics Paris, 6/2017
- ISBIS 2017: IBM Statistics in Business Analytics IBM, New York, 6/2017
- 10th International Conference on Computational and Financial Econometrics Seville, 12/2016

- Latent Variables 2016 University of South Carolina, 10/2016
- Joint Statistical Meeting: *Invited Session* Chicago, 8/2016
- 14th International Society for Bayesian Analysis World Meeting Sardinia, 6/2016
- BFF: Fusion Meeting Rutgers, 3/2016
- 9th International Conference on Computational and Financial Econometrics London, 12/2015
- Joint Statistical Meeting: *IMS Lecture* Seattle, 8/2015
- Joint Statistical Meeting: *Savage Award Finalist Session* Seattle, 8/2015
- 30th European Meeting of Statisticians: *Session on Statistical Genomics* Amsterdam, 7/2015
- 11th International Workshop on Objective Bayes Methodology Valencia, 6/2015
- Joint Statistical Meeting: *IMS Lecture* Boston, 8/2014
- 12th International Society for Bayesian Analysis World Meeting Cancun, 7/2014
- 47th Scientific Meeting of the Italian Statistical Society Cagliari, 7/2014
- 10th International Workshop on Objective Bayes Methodology: *Discussant* Durham, 10/2013
- Joint Statistical Meeting: *Topic Invited Session* Montreal, 8/2013
- Workshop on Bayesian Nonparametrics Leiden, 6/2013
- BAYES 2013 Rotterdam, 5/2013
- International Hexa-Symposium Hasselt, 5/2013
- Spring Symposium in Biostatistics Rotterdam, 5/2013

CONTRIBUTED
TALKS AND
POSTERS

- NeurIPS 2018 Montreal, 12/2018
- NeurIPS 2017 Long Beach, 12/2017
- Opening Workshop on Optimization, SAMSI Durham, 8/2016
- 5th IMS-ISBA joint meeting Chamonix, 1/2014
- 28th International Workshop on Statistical Modelling Pallermo, 7/2013
- 9th Conference on Bayesian Nonparametrics Amsterdam, 6/2013
- 33rd Conference of the International Society for Clinical Biostatistics Bergen, 8/2012
- High-Dimensional Inference with Applications Canterbury, 8/2012
- 27th International Workshop on Statistical Modelling Prague, 6/2012
- 6th Dutch Hematology Congress Arnhem, 2/2012
- 31st Conference of the International Society for Clinical Biostatistics Montpellier, 9/2010

PROFESSIONAL
ACTIVITIES

- **Associate Editor:** The Annals of Statistics (1/2022-present), Journal of the American Statistical Association (1/2023-present), Journal of the Royal Statistical Society (1/2023-present)
- **SBSS Program Chair:** 2020 Program Chair of the Section on Bayesian Statistical Science (SBSS) of the American Statistical Association
- **Organizer:** IMS invited session at JSM 2019, JSM 2014. ISBIS 2017 invited session
- **Member:** International Society for Bayesian Analysis (ISBA) (2012-present), American Statistical Association (ASA) (2012-present), Institute of Mathematical Statistics (IMS) (2016-present)

TEACHING

- **University of Chicago:** Booth School of Business
 - Big Data (BUS 41201), University of Chicago, Spring 2017-present
- **University of Pennsylvania :** Wharton
 - *Stat 542: Bayesian Methods and Computation:* Guest lecturer 4/2015
- **Erasmus University:** taught recitation sections, designed and graded projects, guest lecturer
 - *Bayesian Methods* 2010-2012
 - *Longitudinal Data Analysis* 2010-2012
 - *Classical Statistical Methods* 2010-2012
 - *Modern Statistical Methods* 2010-2012

STUDENTS AND
RESEARCHERS
ADVISED

- **Jiguang Li** (*PhD co-advisor*)
2nd year PhD student in Econometrics and Statistics at the University of Chicago (Booth School of Business)
- **Sean O'Hagan** (*PhD co-advisor*)
2nd year PhD student at the University of Chicago (Department of Statistics)
- **Jungeum Kim**
Current Principal Postdoctoral Researcher
- **Yuexi Wang** (*PhD co-advisor*)
Former PhD student in Econometrics and Statistics at Chicago Booth, now tenure-track faculty at the Department of Statistics at the University of Illinois Urbana-Champaign
- **Enakshi Saha** (*PhD advisor*)
Former PhD student at the University of Chicago (Department of Statistics)
Now postdoctoral researcher at Harvard University
- **Yi Liu** (*PhD advisor*)
Former PhD student at the University of Chicago (Department of Statistics)
- **Lizhen Nie** (*PhD co-advisor*)
Former PhD student at the University of Chicago (Department of Statistics)
Now quantitative researcher at TwoSigma
- **Seonghyun Jeong**
Former Senior (Postdoctoral) Research Professional at Chicago Booth
Now tenure-track faculty at Seoul National University
- **Kenichiro McAlinn**
Former Senior (Postdoctoral) Research Professional at Chicago Booth
Now tenure-track faculty at the Fox Booth of Business of the Temple University
- **Gemma Moran** (*PhD co-advisor*)
Former PhD student at Wharton (Department of Statistics)
Now tenure-track faculty at Rutgers
- **Deshpande Sameer** (*PhD co-advisor*)
Former PhD student at the Wharton (Department of Statistics)
Now tenure-track faculty at the Statistics Department at UW-Madison
- **Stephanie van der Pas** (*PhD thesis defense committee member*)
Now assistant professor at Amsterdam UMC, Department of Epidemiology and Data Science

GRANT SUPPORT

- NSF grant DMS-1944740, PI: Veronika Rockova
- NSF grant DMS-1406563, PI: Edward I. George; collaborator and coauthor of the grant proposal
- AHRQ grant R21-HS021854, PI: Jeffrey Silber; collaborator

MISCELLANY

- Languages: Czech/Slovak, English, Dutch, French (passive), Matlab, C++, R, Stata, SAS, \LaTeX
- Piano: Classical music training since the age of 6
- Avid tennis player and golf neophyte