
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

- Assistant Professor in Econometrics and Statistics, 7/2016-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

- 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)
- Hasselt University: Erasmus Stipend Fellowship granted by European Union (2008-2009), graduated with honors “Magna Cum Laude”.

SELECTED WORK
IN PROGRESS

* designates a student

- Variable Selection via Thompson Sampling.
Liu, Y.* and Rockova, V. (*In Preparation*)
- Fast Posterior Sampling for the Spike-and-Slab LASSO.
Nie, L.* and Rockova, V. (*In Preparation*)
- Uncertainty Quantification for Sparse Deep Learning.
Yuexi Wang* and Rockova V. (2019) (*In Preparation*)
- A note on Semiparametric Bernstein-von Mises Theorems for BART Priors.
Rockova V. (2019)
Working Paper
- Dynamic Sparse Factor Analysis.
McAlinn K., Rockova V. and Saha, E.* (2018)
Working Paper

SUBMITTED WORK

- Multiscale Analysis of Bayesian CART.
Castillo, I. and Rockova, V. (2019)
The Annals of Statistics (*Under Review*)
- Spike-and-Slab LASSO Biclustering.
Moran, G.*, Rockova, V. and George, E. (2019)
The Annals of Applied Statistics (*Under Review*)
- Adaptive Bayesian SLOPE – High-dimensional Model Selection with Missing Values.
Jiang, W.*, Bogdan, M., Josse, J., Miasojedow, B., Rockova, V. and TraumaBase Group (2019)
Journal of Computational and Graphical Statistics (*Under Review*)
- Variable Selection with ABC Bayesian Forests.
Liu, Y.*, Rockova V. and Wang, Y.* (2018)
Journal of the Royal Statistical Association (Series B) (*Revision Invited*)
- The Median Probability Model and Correlated Variables.
Barbieri, M., Berger, J., George, E. and Rockova V. (2018)
Bayesian Analysis (*Revision Invited*)
- Dynamic Variable Selection with Spike-and-Slab Process Priors.
Rockova V. and McAlinn K. (2017+)
Bayesian Analysis (*Revision Submitted*)

PUBLICATIONS

- On Theory for BART.
Rockova V. and Saha, E.* (2019)
22nd Conference on Artificial Intelligence and Statistics (AISTATS) 2019
- Posterior Concentration for Bayesian Regression Trees and Forests.
Rockova V. and van der Pas S. (2017+)
The Annals of Statistics (*In Press*)

- Posterior Concentration for Sparse Deep Learning.
Polson N. and Rockova V. (2018)
32nd Annual Conference on Neural Information Processing Systems (NeurIPS) 2018
- Bayesian Dyadic Trees and Histogram for Regression.
van der Pas S. and Rockova V. (2017)
31st Annual Conference on Neural Information Processing Systems (NeurIPS) 2017
- Simultaneous Variable and Covariance Selection with the Multivariate Spike-and-Slab LASSO.
Deshpande S.* , Rockova V. and George, E. (2017+)
Journal of Computational and Graphical Statistics (In Press)
- On Variance Estimation for Bayesian Variable Selection.
Moran G.* , Rockova V. and George E. (2018+)
Bayesian Analysis (In Press)
- Particle EM for Variable Selection.
Rockova V. (2018)
Journal of the American Statistical Association, 113(524), 1684–1697
- The Spike-and-Slab LASSO.
Rockova V. and George E. (2018)
Journal of the American Statistical Association, 113(521), 431–444
- Bayesian Estimation of Sparse Signals with a Continuous Spike-and-Slab Prior.
Rockova V. (2018)
The Annals of Statistics, 46(1), 401-437
- 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), 1229-47
- 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

- Determinantal Priors for Bayesian Variable Selection.
Rockova V. and George E. (2014)
Proceedings of 47th Scientific Meeting of Italian Statistical Society
- Fast EM Inference for Bayesian Factor Analysis with Indian Buffet Process Prior.
Rockova V. and George E. (2014)
Proceedings of 47th Scientific Meeting of Italian Statistical Society
- Dual Coordinate Ascent EM for Bayesian Variable Selection.
George E., Rockova V. and Lesaffre E. (2013)
Proceedings of 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)
Proceedings of 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)
Proceedings of 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.J., Erpelinck 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., Jongen-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 Cambridge, 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

- 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
- 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

INVITED
CONFERENCE
TALKS

- 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, 8/2006
- 28th International Workshop on Statistical Modelling Pallermo, 7/2013
- 33rd Conference of the International Society for Clinical Biostatistics Bergen, 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
- 5th IMS-ISBA joint meeting Chamonix, 1/2014
- High-Dimensional Inference with Applications Canterbury, 8/2012
- 9th Conference on Bayesian Nonparametrics Amsterdam, 6/2013

PROFESSIONAL
ACTIVITIES

- **SBSS Program Chair Elect:** Elected to be the 2020 Program Chair of the Section on Bayesian Statistical Science (SBSS) of the American Statistical Association
- **Associate Editor:** Bayesian Analysis (12/2017-present)
- **Reviewer:** The Annals of Statistics, Journal of the American Statistical Association (Theory and Methods), Journal of Computational and Graphical Statistics, Statistical Science, Electronic Journal of Statistics, Bernoulli, Statistica Sinica, Biometrics, Statistical Modeling

- **Organizer:** IMS invited session at JSM 2019 (Denver), IMS invited session at JSM 2014 (Boston), 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, Spring 2018
- “Variable Selection: Past, Present and Future”: Co-instructor of an invited short course at the Conference of Young Statisticians in Cagliari 2014
- **University of Pennsylvania**
 - *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

- Enakshi Saha (*PhD advisor*)
4th year PhD student at the University of Chicago statistics department
- Yi Liu (*PhD advisor*)
3rd year PhD student at the University of Chicago statistics department
- Lizhen Nie (*PhD co-advisor*)
3rd year PhD student at the University of Chicago statistics department
- Yuexi Wang (*PhD co-advisor*)
2nd year PhD student in Econometrics and Statistics at Chicago Booth
- Qian Yu (*PhD co-advisor*)
3rd year PhD student at the University of Chicago statistics department
- Seonghyun Jeong
Senior Research Professional at Chicago Booth
- Kenichiro McAlinn
Former Senior 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 statistics department, now postdoc at Columbia University
- Deshpande Sameer (*PhD co-advisor*):
former PhD student at the Wharton statistics department, now postdoc at MIT
- Stephanie van der Pas (*PhD thesis defense committee member*)
now faculty at the Mathematics Institute at Leiden University

- GRANT SUPPORT
- NSF grant DMS-1406563, PI: Edward I. George; collaborator and coauthor of the grant proposal
 - AHRQ grant R21-HS021854, PI: Jeffrey Silber; collaborator
- COMPUTER SKILLS
- Statistical: R/S-Plus, WinBUGS, Stata, SAS, SPSS
 - Languages: Matlab, C/C++
 - L^AT_EX, unix shell scripts
- MISCELLANY
- Languages: Czech/Slovak, English, Dutch, French (passive knowledge)
 - Playing piano: Classical music training since the age of 6