
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
 - Advisor: Prof. Edward I. George

EDUCATION

ERASMUS UNIVERSITY, Rotterdam, The Netherlands
Erasmus Medical Centre

- Ph.D., Biostatistics, 9/2009-11/2013
 - Dissertation Topic: “Bayesian Variable Selection in High-dimensional Applications”
 - Advisor: Prof. Emmanuel Lesaffre

CHARLES UNIVERSITY, Prague, Czech Republic
Faculty of Mathematics and Physics, Department of Probability and Mathematical Statistics

- M.Sc., Mathematical Statistics, 9/2007-6/2010
 - Thesis Topic: “Non-negative Time Series”
 - Advisor: Prof. Jiří Anděl
- B.Sc., General Mathematics, 9/2004-6/2007
 - Thesis Topic: “Tests for Periodicity in Time Series”
 - Advisor: Prof. Jiří Anděl

UNIVERSITEIT HASSELT, Hasselt, Belgium
Faculty of Sciences, Centre for Statistics

- M.Sc., Biostatistics, 9/2008-9/2009
 - Thesis Topic: “Bayesian Methods for Prediction of Rheumatoid Arthritis”
 - Advisor: Prof. Emmanuel Lesaffre

HONORS AND AWARDS

- James S. Kemper Foundation Faculty Scholar, University of Chicago, 7/2016-present.
- First Honorable Mention (runner up) for the 2014 Leonard J. Savage Award for outstanding dissertation in Bayesian statistical theory and methods awarded by ISBA.

- Travel award for attending O'Bayes 2015 (Valencia, Spain). National Science Foundation travel award for attending O'Bayes 2013 (Durham, USA). Travel award for attending ISBA 2014 World Meeting (Cancun, Mexico). Travel award for attending 5th IMS-ISBA joint meeting (Chamonix, France).
- Erasmus University: Graduated with "Cum Laude" (highest honor designation awarded annually to 5/200 graduate students)
- Hasselt University: Erasmus Stipend Fellowship granted by European Union (2008-2009), graduated with honors "Magna Cum Laude".
- Charles University: Stipend Fellowship from the Faculty of Mathematics and Physics (2006-2008).

SUBMITTED WORK

- Posterior Concentration for Sparse Deep Learning
Polson N. and Rockova V. (2018) (*arXiv*)
- On Variance Estimation for Bayesian Variable Selection
Moran G., Rockova V. and George E. (2018) (*Submitted*)
- Dynamic Variable Selection with Spike-and-Slab Process Priors.
Rockova V. and McAlinn K. (2018) (*Submitted*)
- Posterior Concentration for Bayesian Regression Trees and Their Ensembles.
Rockova V. and van der Pas S. (2017) (*Submitted*)
- Simultaneous Variable and Covariance Selection with the Multivariate Spike-and-Slab Lasso .
Deshpande S., Rockova V. and George, E. (2017) (*Revision Invited*)

STATISTICAL PUBLICATIONS

- Bayesian Dyadic Trees and Histogram for Regression.
van der Pas S. and Rockova V. (2017)
31st Annual Conference on Neural Information Processing Systems (NIPS) 2017
- Particle EM for Variable Selection.
Rockova V. (2016+)
Journal of the American Statistical Association (Accepted)
- The Spike-and-Slab LASSO.
Rockova V. and George E. (2016+)
Journal of the American Statistical Association (Accepted)
- 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
- 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
- Determinantal Regularization for Ensemble Variable Selection.
Rockova V., Moran G. and George E. (2016)
19th Conference on Artificial Intelligence and Statistics (AISTATS) 2016
- 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
- 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
- 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., Pratorcorona 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., Eiwien 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

- 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

- 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

INVITED
CONFERENCE
TALKS

- 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

 - NIPS 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 Montpelier, 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

 - **Associate Editor:** Bayesian Analysis
 - **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 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-
 - “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 POSTDOCS ADVISED

 - Enakshi Saha (2nd year PhD student at the University of Chicago statistics department)

- Yi Liu (1st year PhD student at the University of Chicago statistics department)
- Yuexi Wang (2nd year master student at the University of Chicago statistics department)
- Kenichiro McAlinn (senior research professional at Chicago Booth)
- Gemma Moran (co-advisor, 3rd year PhD student at Wharton statistics department)
- Deshpande Sameer (co-advisor, 5th year PhD student at Wharton statistics department)
- Stephanie van der Pas (committee member, 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
 ■ Tennis