Agnieszka Borowska

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Contact Information

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Research Interests

Bayesian statistics, computational statistics, Monte Carlo methods, high-dimensional problems, time series, state space models, rare events

Current Position

University of Glasgow, UK — from May 2018
Postdoctoral researcher in Statistics (with Prof. Dirk Husmeier)
Position within the SofTMech Centre (an EPSRC centre for Multiscale Soft Tissue Mechanics)

Education

VU Amsterdam and **Tinbergen Institute**, The Netherlands — Jul. 2019
Ph.D. in Econometrics
Title: *Methods for Accurate and Efficient Bayesian Analysis of Time Series*
Supervisors: Prof. Siem Jan Koopman and Dr Lennart Hoogerheide

Tinbergen Institute and **VU Amsterdam**, The Netherlands — Aug. 2015
M.Phil. in Econometrics

University of Warsaw, Poland — Sep. 2013
Faculty of Mathematics, Informatics and Mechanics
B.Sc. in Mathematics *minor:* Probability Theory

Warsaw School of Economics, Poland — Jan. 2012
M.Sc. in Economics, *major:* Macroeconomic Analysis

Warsaw School of Economics, Poland — Jul. 2009
B.Sc. in Economics, *major:* Macroeconomic Analysis
minor: Computational and Optimisation Methods in Decision Making

Visits and exchanges

University of Edinburgh, UK — Apr. 2017 – Jun. 2017
Postgraduate Research Visit at the School of Mathematics
Host Supervisor: Prof. Ruth King

University of Göttingen, Germany — Sep. 2010 – Feb. 2011
Faculty of Economics and Business Administration
M.Sc. programme, exchange within the Erasmus Programme

Publications

Journals

Partially Censored Posterior for Robust and Efficient Risk Evaluation
with Lennart Hoogerheide, Siem Jan Koopman and Herman K. van Dijk
Journal of Econometrics, 2020

Time-varying Combinations of Bayesian Dynamic Models and Equity Momentum Strategies
with Nalan Baştürk, Stefano Grassi, Lennart Hoogerheide and Herman K. van Dijk
Journal of Econometrics, 2018

Bayesian Dynamic Modeling of High-Frequency Integer Price Changes
with István Barra and Siem Jan Koopman
Journal of Financial Econometrics, 2018

Conferences

Massive Dimensionality Reduction for the Left Ventricular Mesh
with Lukasz Romaszko, Alan Lazarus, Hao Gao, Xiaoyu Luo and Dirk Husmeier
Proceedings of the International Conference on Statistics: Theory and Applications 2019

Direct Learning Left Ventricular Meshes from CMR Images
with Lukasz Romaszko, Alan Lazarus, Hao Gao, Xiaoyu Luo and Dirk Husmeier
Proceedings of the International Conference on Statistics: Theory and Applications 2019

Submitted	***Efficient Bayesian Risk Estimation for Long Horizons*** with Lennart Hoogerheide and Siem Jan Koopman (submitted to *Computational Statistics and Data Analysis*) ***Semi-Complete Data Augmentation for Efficient State Space Model Fitting*** with Ruth King (submitted to *Journal of Computational and Graphical Statistics*) ***Gaussian Process Enhanced Semi-Automatic ABC: Parameter Inference in a Stochastic Differential Equation System for Chemotaxis***, with Diana Giurghita and Dirk Husmeier (submitted to *Journal of Computation Physics*)
Ongoing Research	***Bayesian Optimisation for Parameter Inference in Cardio-Mechanic Models*** with Dirk Husmeier, Alan Lazarus, Hao Gao and Xiaoyu Luo ***Bayesian Risk Evaluation for State-Space Models*** with Lennart Hoogerheide and Siem Jan Koopman
Service	Reviewing for: *Annals of Applied Statistics*, *Journal of Financial Econometrics*, *Statistical Applications in Genetics and Molecular Biology*, *Computational Economics*

Selected Conference and Seminar Presentations ([P]–poster)

British Applied Mathematics Colloquium (postponed due to Covid-19), Glasgow, UK	6–9 Apr. 2020
ABC in Grenoble Workshop (cancelled due to Covid-19), Grenoble, France	19–20 Mar. 2020
Seminar Series of the Division of Aerodynamics, Warsaw University of Technology, Warsaw, Poland	12 Dec. 2019
3rd Annual Workshop on Financial Econometrics , Örebro, Sweden	11–12 Nov. 2019
10th European Seminar on Bayesian Econometrics [P], St Andrews, UK	2–3 Sep. 2019
International Conference on Statistics: Theory and Applications, Lisbon, Portugal	13–14 Aug. 2019
39th International Symposium on Forecasting, Thessaloniki, Greece	16–19 Jun. 2019
Workshop on Uncertainty Quantification for Cardiac Models [P], Cambridge, UK	5–7 Jun. 2019
Cside 2018 Conference, Glasgow, UK	26 Nov. 2018
2nd Joint Liverpool-Glasgow Maths Healthcare Centre Meeting, Liverpool, UK	30 Aug. 2018
4th Bayesian Young Statisticians Meeting, Warwick, UK	02 – 03 Jul. 2018
12th Netherlands Econometric Study Group Meeting [P], Amsterdam, The Netherlands	25 May 2018
1st Bayes Comp [P], Barcelona, Spain	26– 28 Mar. 2018
10th International Conference of the ERCIM WG on Computational and Methodological Statistics [P], London, UK	16– 18 Dec. 2017
8th European Seminar on Bayesian Econometrics, Maastricht, The Netherlands	26–27 Oct. 2017
Sequential Monte Carlo Workshop 2017 [P], Uppsala, Sweden	30 Aug. – 1 Sep. 2017
1st International Conference on Econometrics and Statistics, Hong Kong	15–17 Jun. 2017
Statistics Seminar Series of the School of Mathematics, Edinburgh, UK	19 May 2017
10th International Conference on Computational and Financial Econometrics, Seville, Spain	9–11 Dec. 2016
3rd Bayesian Young Statisticians Meeting, Florence, Italy	20–21 Jun. 2016
11th Netherlands Econometric Study Group Meeting [P], Leuven, Belgium	17–18 Jun. 2016

Selected Professional Research Experience

University of Warsaw, Poland
Researcher Feb. 2012 – Sep. 2014
Pension system reform modelling within the OLG framework under time inconsistency; welfare analysis of various fiscal closures; numerical model solving in Fortran; paper writing and editing.

National Bank of Poland, Warsaw, Poland
Internship in the Economics Institute, Monetary Policy Strategy Bureau Aug. 2009
Comparison and evaluation of the communication tools and institutional solutions implemented in selected central banks.

Project Funding

SofTMech Feasibility Fund (10,000 GBP) Jan. – Mar. 2020
co-investigator and co-supervisor (with Dirk Husmeier, Alan Lazarus and Hao Gao)
A follow-up 3-month study on the 2019 project to employ a postdoc to develop a large-scale convolutional neural network for direct learning of 3D geometries from images as well as to perform deep-learning based classification of medical images.

SofTMech Feasibility Fund (10,000 GBP) Jan. – Mar. 2019
co-investigator and co-supervisor (with Dirk Husmeier and Hao Gao)
A 3-month project employing a postdoc to investigate the usefulness of deep learning techniques for dimensionality reduction of 3D geometries and for direct learning these geometries from image data.

Travel Grants, Awards and Scholarships

Örebro University School of Business travel funding (650 EUR)
to attend Workshop on Financial Econometrics, Örebro, Sweden Sep. 2019

International Institute of Forecasters travel award (1660 USD)
to attend ISF 2019 and the forecasting summer school Mar. 2019

Cside 2018 1st place prize (250 GBP)
for 2 subcompetitions for SDE models Nov. 2018

ISBA travel award to attend BAYSM 2018 (400 USD) Apr. 2018

SMC 2017 scholarship (15,000 SEK $\approx$ 1600 EUR) Aug. 2017
to attend the SMC 2017 workshop and the intensive course

Tinbergen Institute merit-based scholarship (30,000 EUR)
Tinbergen Institute, full scholarship, 2 years of MPhil Sep. 2013 – Aug. 2015

Student Exchange Scholarship
Warsaw School of Economics, the LLP Erasmus Sep. 2010 – Feb. 2011

Scholarship for excellent academic achievements
Warsaw School of Economics Oct. 2007 – Sep. 2010

Teaching Experience

University of Glasgow, UK
Honours and MSc Projects supervision (Statistics) 2018/2019
Co-supervision with Dirk Husmeier

VU Amsterdam, the Netherlands
Econometrics II (B.Sc. course) Feb. – Mar. 2017
Teaching Assistant of Lennart Hoogerheide

Business Mathematics (B.Sc. course, evaluation: 3.8/5) Sep. – Oct. 2016

Business Statistics (B.Sc. course, evaluation: 4.1/5) Feb. – Mar. 2016

Tinbergen Institute, Amsterdam, the Netherlands
Advanced Econometrics II (M.Phil. course, evaluation: 4.1/5) Jan. – Feb. 2015
Teaching Assistant of Kees Jan van Garderen

Measure Theory and Stochastic Processes (M.Phil. course, evaluation: 4.2/5) Sep. – Oct. 2014
Teaching Assistant of Peter J. C. Spreij

Additional Courses and Trainings

Forecasting Summer School
Thessaloniki, Greece — Jun. 2019
Probabilistic forecasting (scoring rules, combining predictive distributions)

Scalable Bayesian Inference
Edinburgh, UK — Jun. 2018
Scalable algorithms for large datasets (embarrassingly parallel MCMC, approximate MCMC), scalable Bayesian methods for very high-dimensional data analysis

Workshop on Machine Learning Models and Methods for Econometricians
Maastricht, The Netherlands — Oct. 2017
Gaussian processes, distributed and subsampling MCMC, variational Bayes, deep learning

Intensive PhD level course on Sequential Monte Carlo Methods
Uppsala University, Sweden — Aug. 2017
Particle MCMC, high-dimensional filtering, SMC for probabilistic graphical models and probabilistic programming

Reading Group on Bayesian Nonparametrics
University of Edinburgh, UK — May – Jun. 2017
Introduction to Dirichlet process and their mixtures, Bayesian nonparamteric regression

Course on High Performance Computing
VU Amsterdam, The Netherlands — Oct. 2016
Basics of Unix and cluster computing, Hadoop and data analytics, GPU programming, HPC cloud

Summer School in Applied Macroeconomics
University of Salento, Lecce, Italy — Jul. 2012
Programming in Matlab, VAR for monetary policy, state space models and the Kalman Filter

Computer Skills

Strong experience in MATLAB, R, Fortran

Some experience with Python, C/C++, BUGS/JAGS

Familiarity with EViews, Stata, SPSS

Other: LaTeX, Linux, GitHub

Language Skills

Polish (native), English (fluent), German (good command),
Russian (intermediate), French (basic), Dutch (basic)

References

Prof. Siem Jan Koopman
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Prof. Ruth King
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