Agnieszka Borowska

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Contact Information

University of Glasgow
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Research Interests

Bayesian statistics, computational statistics, Monte Carlo methods, approximate Bayesian computations, time series, state space models, rare events

Employment

University of Glasgow, UK — from June 2020
Research Associate in Statistics
Position within the Closed-Loop Data Science project (an EPSRC funded project for Complex, Computationally- and Data-Intensive Analytic) (on leave Apr. – Nov. 2021)

University of Glasgow, UK — May 2018 – May 2020
Research Assistant in Statistics
Position within the SofTMech Centre (an EPSRC centre for Multiscale Soft Tissue Mechanics)

VU Amsterdam, The Netherlands — Sep. 2015 – Jul. 2019
Ph.D. candidate in Econometrics

Erasmus University Rotterdam, The Netherlands — Sep. 2014 – Dec. 2014
Teaching Assistant for graduate level courses

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

Neural network-based left ventricle geometry prediction from CMR images with application in biomechanics,
with Lukasz Romaszko, Alan Lazarus, David Dalton, Collin Berry, Xiaoyu Luo, Dirk Husmeier and Hao Gao
Artificial Intelligence In Medicine, 2021

Gaussian Process Enhanced Semi-Automatic ABC: Parameter Inference in a Stochastic Differential Equation System for Chemotaxis,
with Diana Giurghita and Dirk Husmeier
Journal of Computational Physics, 2020

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

Inference in Cardiovascular Modelling Subject to Medical Interventions
with Mihaela Paun, Mitchel J. Colebank, Mette S. Olufsen and Dirk Husmeier
Proceedings of the International Conference on Statistics: Theory and Applications 2021

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 and under revision

Semi-Complete Data Augmentation for Efficient State Space Model Fitting
with Ruth King
(revision for *Journal of Computational and Graphical Statistics*)

Efficient Bayesian Risk Estimation for Long Horizons
with Lennart Hoogerheide and Siem Jan Koopman
(submitted)

Bayesian Optimisation for Efficient Parameter Inference in a Cardiac Mechanics Model of the Left Ventricle,
with Hao Gao, Alan Lazarus and Dirk Husmeier
(submitted)

Service

Reviewing for: *Annals of Applied Statistics*, *Journal of the Royal Society Interface*, *Journal of Financial Econometrics*, *Statistical Applications in Genetics and Molecular Biology*, *Computational Economics*

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

British Applied Mathematics Colloquium (BAMC),
Glasgow, UK (online) — 6-9 April 2021

RSS Glasgow Local Group Event,
Glasgow, UK (online) — 9 February 2021

Statistics Seminar Series of the School of Mathematics and Statistics,
Glasgow, UK (online) — 29 January 2021

One World Approximate Bayesian Computation (ABC) Seminar,
Warwick, UK (online) — 29 October 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) — 2018–2021

VU Amsterdam, the Netherlands
TA for *Econometrics II* (B.Sc. course) — Feb. – Mar. 2017
TA for *Business Mathematics* (B.Sc. course, evaluation: 3.8/5) — Sep. – Oct. 2016
TA for *Business Statistics* (B.Sc. course, evaluation: 4.1/5) — Feb. – Mar. 2016

Tinbergen Institute, Amsterdam, the Netherlands
TA for *Advanced Econometrics II* (M.Phil. course, evaluation: 4.1/5) — Jan. – Feb. 2015
TA for *Measure Theory and Stochastic Processes* (M.Phil. course, evaluation: 4.2/5) — Sep. – Oct. 2014

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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Dr Lennart Hoogerheide
Department of Econometrics and OR
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Econometric Institute,
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Prof. Ruth King
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