Yuliya Shapovalova

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Academic Interests

Probabilistic machine learning and Bayesian statistics, time series, machine learning on graphs, Gaussian processes, uncertainty quantification

Academic Positions

2022–present **Assistant Professor**, Institute for Computing and Information Sciences (ICIS), Faculty of Science, Radboud University

2018–2022 **Post Doc**, Institute for Computing and Information Sciences (ICIS), Faculty of Science, Radboud University

Jan 2018 - Sep 2018 **Research Associate**, Division of Informatics, Imaging, and Data Science, The University of Manchester

2014–2018 **Ph.D. researcher**, Econometrics, Maastricht University

Education

2014–2019 **Ph.D.**, Econometrics, Maastricht University

Thesis *Bayesian Inference in Multivariate Nonlinear State-Space Models*

Supervisors Jean-Pierre Urbain, Michael Eichler

2013–2014 **M. Sc.**, Economic and Financial Research, track Econometrics
Maastricht University

Thesis *Graphical Multivariate Stochastic Volatility Models: Estimation and Model Selection*

Supervisor Michael Eichler

2012–2013 **M. Sc.**, Econometrics and Operations Research, track Econometrics
Maastricht University

Thesis *Conditional Independence and Markov Equivalence in (Granger-causal) Graphical Models*

Supervisor Michael Eichler

Publications

2023 Measuring and Quantifying Uncertainty in Volatility Spillovers: A Bayesian Approach, *Data Science in Science, 2:1.*

Authors Yuliya Shapovalova, Michael Eichler

2023 Combined modelling of mRNA decay dynamics and single-molecule imaging in the Drosophila embryo uncovers a role for P-bodies in 5' to 3' degradation,*PLOS Biology 21.1.*

Authors Forbes Beadle, Lauren, Jennifer C. Love, Yuliya Shapovalova, Artem Artemev, Magnus Rattray, and Hilary L. Ashe.

2022 Non-parametric synergy modeling of chemical compounds with Gaussian processes, *BMC Bioinformatics 23: 1-30*

Authors Yuliya Shapovalova, Tom Heskes, Tjeerd Dijkstra

2021 “Exact” and approximate methods for Bayesian inference: stochastic volatility case study. *Entropy*, 23(4), 466.

Authors Yuliya Shapovalova

2021 Multivariate Count Data Models for Time Series Forecasting. *Entropy* 23.6 (2021): 718.

Authors Yuliya Shapovalova, Nalan Bastürk, Michael Eichler

2020 Graphical causal models and imputing missing data: a preliminary study. *International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems. Springer, Cham, 2020.*

Authors Rui Jorge Almeida, Greetje Adriaans, Yuliya Shapovalova

Working papers

Title Improving precipitation nowcasting for high-intensity events using deep1 generative models with balanced loss and temperature data

Authors Charlotte Cambier van Nooten, Koert Schreurs, Jasper S. Wijnands, Hidde Leijnse, Maurice Schmeits, Kirien Whan, Yuliya Shapovalova

Title Improving Gaussian processes drug-drug synergy modeling with monotonicity constraints

Authors Yuliya Shapovalova, Tom Heskes, Tjeerd Dijkstra

Title Biomarker development with additive Gaussian processes in high-resolution pesticide mixture exposures using the springtail Folsomia candida

Authors Ruben Bakker, Yuliya Shapovalova, Tjeerd Dijkstra, Dick Roelofs, Tom Heskes, Kees van Gestel, Katja Hoedjes

Title Meauring connectivity in time series with deep neural networks

Authors Yuliya Shapovalova

Supervision of students

Master thesis supervision

2022 Charlotte Cambier van Nooten ”Precipitation nowcasting for high-intensity events using deep generative models”

2022 Jaap Dijkstra ”Graph Neural Networks for Grid Expansion”

2021 Luke Reijnen ”Scaling Graph Convolutional Neural Networks”

2021 Koert Schreurs ”Precipitation Forecasting from Radar Images with Generative Adversarial Networks”

2020 Bob de Ruiter ”Multi-model Ensemble for Medium-Term Precipitation Using Convolutional Neural Networks”

2020 Sonja Fúllhase ”Testing the $n-1$ principle with Graph Neural Networks”

2019 Sander ter Stege ”Optimal Demand Forecasting in-practice”

Bachelor thesis supervision

2018 Jaap Dijkstra "Gaussian Processes versus Autoregressive Wild Bootstrap: Climate Application"

Teaching Experience

Lecturer

2019 – 2023 Statistical Machine Learning (responsible for practical sessions and some of the lectures)

2022 – 2023 Research seminar data science (coordinator)

Teaching Assistant

2019 – 2022 Machine Learning in Practice (supervision of three teams each year in Kaggle competitions)

2019 – 2022 Research Seminar Data Science (supervision of 2-3 students each year in writing referee reports)

Teaching Assistant/Tutor (Problem-Based Learning)

2016 – 2017 Probability Theory

2014 – 2017 Quantitative Methods

2014 – 2017 Quantitative Business and Statistics

Research Grants and Scholarships

2021 Green Information Technology voucher (€30.000). "STORM: Switch Tagging and Outlier Recognition for power grid Measurements", with Roel Bouman (RU), Tom Heskes (RU), Jacco Heres (Alliander)

2020 Educational Innovation grant at Radboud University (€10.000). "Semi-automated assignment grading and evaluation using Jupyter notebooks", with Chris Kamphuis, Gabriel Bucur, Lisa Tostrams, Tom Claassen, Tom Heskes

2017 Scholarship to attend the SMC 2017

2016 International Travel Grant for Graduate Students

Other Academic Activities

Program Committee Member

2019 - 2023 UAI, NeurIPS, ICML, ICLR

Referee Activity

2019 - 2023 IEEE Transactions on Neural Networks and Learning Systems, Transactions on Knowledge and Data Engineering, PLOS ONE, Journal of Graphical and Computational Statistics

Presentations

2021 "Non-parametric drug synergy modeling with Gaussian processes". Faculty seminar, Maastricht University

2021 "Modelling the mRNA degradation dynamics of Drosophila melanogaster early development", GRIND seminar, Manchester University

2020 "Gaussian processes in computational biology: an introduction". Group seminar, Vrij Universiteit Amsterdam

2017 "Volatility spillovers with multivariate stochastic volatility models". Radboud University, Data science group, Nijmegen

2016 "Volatility spillovers with multivariate stochastic volatility models". Workshop on Advances in Quantitative Economics, Maastricht 19-20th of December

2016 "Advances in Bayesian computations with application to stochastic volatility models", CFE-ERCIM Conference, Seville.

2016 "Volatility spillovers with multivariate stochastic volatility models", 15ème Journée d'Économétrie, EconomiX-CNRS, Université Paris Ouest - Nanterre La Défense

2016 "Bayesian inference in multivariate stochastic volatility models". Faculty seminar, Aix-Marseille University (FRUMAM, School of Mathematics)

2015 "Volatility spillovers with multivariate stochastic volatility models". CFE-ERCIM 2015, London

Poster Presentations

2018 Advances in Data Science 2018, Manchester, United Kingdom

2017 ESOBE 2017, Maastricht, the Netherlands

2017 Sequential Monte Carlo Workshop 2017, Uppsala, Sweden, 29.08-1.09

Workshops and Tutorials Attended

2018 Gaussian Processes Summer School, Sheffield, The UK

2017 Sequential Monte Carlo Workshop, Uppsala, Sweden

2017 Validating and Expanding Approximate Bayesian Computation Methods, Banff, Canada

2016 Bayesian Statistics and Algorithms, CIRM, Marseille, France

2014 Multivariate Time Series: Bayesian Dynamic Modelling and Forecasting, Pisa, Italy

Computer Skills

Everyday Python, R, Fortran, LaTeX

Experienced Matlab

Basic C, SQL

Languages

Russian Mother tongue

English Fluent

Dutch C1