Matteo Fasiolo

Curriculum Vitae

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Work

2015– Current **Post-doctoral Research Associate**, University of Bristol.
Research focus: additive models, quantile regression, electricity load forecasting.
Advisor: Simon N. Wood.

2014–2015 **Post-doctoral Research Assistant**, University of Liverpool.
Research focus: particle filters, adaptive importance sampling, Langevin MCMC.
Advisor: Simon Maskell.

Education

2011–2016 **PhD**, *Statistics*, University of Bath.
Thesis title: Statistical Methods for Complex Population Dynamics.
Supervisor: Simon N. Wood.

2010-2011 **MSc**, *Financial Eng.*, Birkbeck College, Mark: Distinction.

2008-2010 **MEng**, *Industrial Management Eng.*, University of Udine, Mark: 110/100.

2004-2008 **BEng**, *Industrial Management Eng.*, University of Udine, Mark: 106/110.

Collaborations

2015– current **Électricité de France**.
Working with EDF R&D on additive quantile regression for short/middle term load forecasting. Accurate forecasts are essential for efficient electricity production planning.

2013–2015 **Bristol Heart Institute**.
Collaborated with a group of cardiologists at BHI, interested in predicting the occurrence of different heart conditions on the basis of a number of risk factors.

2009–2010 **Regional Health Agency of Friuli Venezia Giulia**.
Used semi-parametric mixed models to identify which factors determine the type of surgery that patients with breast cancer undergo.

Software

synlik object-oriented (S4) framework and tools for performing synthetic likelihood inference for models where the likelihood function is unavailable or intractable.

esaddle tools for fitting the empirical saddlepoint density of Fasiolo et al. (2016c).

mvnfast fast parallel tools related to multivariate normal and student's t densities. Performance achieved using C++, OpenMP and a parallel cryptographic RNG.

qgam methods for fitting additive quantile regression models. Substantial extension of the *mgcv* R package. Available at: `github.com/mfasiolo/qgam`.

LIMIS Julia package implementing the Langevin incremental mixture importance sampler of Fasiolo et al. (2016a). Available at: `github.com/mfasiolo/LIMIS`.

Programming skills

R-Project
- Monte Carlo algorithms implementation; regression-based data analysis; S4 programming; debugging and profiling; multicore computation; C, C++ and Cuda-C interfacing; shiny programming.

HPC
- CUDA-C or OpenMP parallel programming; C++ STL; C++ Armadillo linear algebra library; parallelization on super-computers via PBS.

Talks/Seminars

Upcoming
- Jan: half-day workshop on quantile GAMs of the university of Tübingen.
- Sept: seminar on quantile GAMs at the ENBIS meeting in Naples.
- Oct: half-day course on quantile GAMs at EDF labs in Paris.

Past
- Oct 2016: seminar on quantile GAMS at the university of Udine.
- Sept 2016: seminar on probabilistic electricity forecasting at EDF labs.
- Jul 2016: presentation of the *qgam* package at UseR2016 in San Francisco.
- Feb 2016: online seminar on empirical saddlepoint at the i-like programme.
- 2015: plenary on particle flow at IMA conference in Birmingham.

Publications

- Wood, S. N., and Fasiolo M., 2017. A generalized Fellner-Schall method for smoothing parameter estimation with application to Tweedie location, scale and shape models. To appear on Biometrics.
- Fasiolo, M., Goude, Y., Nedellec, R. and Wood, S. N., 2017. Fast calibrated additive quantile regression. In preparation. Draft available at `https://github.com/mfasiolo/qgam/blob/master/draft_qgam.pdf`.
- Fasiolo, M., de Melo F. E., and Maskell S., 2016a. Langevin Incremental Mixture Importance Sampling. Submitted. arXiv:1611.06874.
- Fasiolo, M., Pya, N. and Wood, S.N., 2016b. A Comparison of Inferential Methods for Highly Nonlinear State Space Models in Ecology and Epidemiology. Stat. Sci., 31(1), p.96-118.
- Fasiolo, M., Wood, S.N., Hartig, F. and Bravington, M.V., 2016c. An Extended Empirical Saddlepoint Approximation for Intractable Likelihoods. Submitted. arXiv:1601.01849.
- Fasiolo, M., and Simon N. Wood., 2015. Approximate methods for dynamic ecological models. To appear in the Handbook of Approximate Bayesian Computation. arXiv:1511.02644.
- de Melo, F. E., Maskell, S., Fasiolo, M. and Daum, F., 2015. Stochastic Particle Flow for Nonlinear High-Dimensional Filtering Problems. arXiv:1511.01448.
- Ahmed, N., Frontera, A., Carpenter, A., Cataldo, S., Connolly, G.M., Fasiolo, M., Cripps, T., Thomas, G., Diab, I. and Duncan, E.R., 2015. Clinical predictors of pacemaker implantation in patients with syncope receiving implantable loop recorder with or without ECG conduction abnormalities. Pacing and Clinical Electrophysiology, 38(8), pp.934-941.
- Frontera, A., Carpenter, A., Ahmed, N., Fasiolo, M., Nelson, M., Diab, I., Cripps, T., Thomas, G. and Duncan, E., 2015. Demographic and Clinical Characteristics to Predict Paroxysmal Atrial Fibrillation: Insights from an Implantable Loop Recorder Population. Pacing and Clinical Electrophysiology, 38(10), pp.1217-1222.
- Frontera, A., Carpenter, A., Ahmed, N., Fasiolo, M., Diab, I., Cripps, T., Thomas, G. and Duncan, E., 2014. Prevalence and significance of early repolarization in patients presenting with syncope. International journal of cardiology, 176(1), pp.298-299.