

**ABOUT**

wessel.p.bruinsma   
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 Wessel Bruinsma 

wesselb.github.io   
 Wessel Bruinsma   
 wesselb 

**LANGUAGES**

dutch, native  
 english

**INTERESTS**

probabilistic modelling with a focus on time series, Bayesian nonparametrics with a focus on Gaussian processes, approximate inference, probabilistic programming, probability theory, and real analysis

**EDUCATION**

- |               |   |   |
|---------------|---|---|
| 18/01 – now   | <b>PhD</b>  | Machine Learning Group, University of Cambridge |
|               | • Supervised by Dr Richard Turner   |   |
| 15/10 – 16/09 | <b>MPhil</b>  | Dept. of Engineering, University of Cambridge   |
|               | • Distinction, class rank 1 / ~20   |   |
|               | • <a href="#">Machine learning and machine intelligence</a>                   |   |
| 12/09 – 15/07 | <b>BSc (Hons)</b>   | EEMCS, Delft University of Technology           |
|               | • Distinction, class rank 1 / ~100  |   |
|               | • <a href="#">Electrical engineering with a specialisation in mathematics</a> |   |

**PROFESSIONAL HISTORY**

- |               |   |                                 |
|---------------|---|---------------------------------|
| 19/07 – 19/09 | <b>Internship in Quantitative Research</b>  | G-Research, London              |
| 16/09 – 18/01 | <b>Machine Learning Researcher</b>  | Invenia Labs Limited, Cambridge |
|               | • Research into modelling multi-output time series, with a focus on electricity markets |                                 |
| 14/09 – 15/07 | <b>Technical Specialist</b>   | EEMCS Recruitment Days, Delft   |
|               | • Design and implementation of solutions to scheduling problems                         |                                 |
| 13/09 – 14/07 | <b>Electrical Engineer</b>  | TU Delft Solar Boat Team, Delft |
|               | • Design and analysis of a power distribution system                                    |                                 |
|               | • Competed in DONG Solar Energy Challenge 2014 and Solar1 Monte Carlo Cup 2014          |                                 |

**AWARDS AND GRANTS**

- |             |   |
|-------------|---|
| 2018 – 2021 | <b>International Doctoral Scholarship (IDS) Grant Covering PhD Fees and Stipend</b> |
| 16/03       | <b>UfD – Damen Bachelor Award (EUR 2000)</b>  |

**INVITED TALKS**

- |       |   |
|-------|---|
| 19/01 | <b>Online Winter School on Spectral Methods for Complex Systems</b> |
|       | • Spectral Methods in Gaussian Modelling                            |

**SELECTED PAPERS**

- [\[link\]](#) Bruinsma, W. P., Perim E., Tebbutt W., Hosking J. S., Solin A., Turner R. E. (2019) “Exact Scalable Inference in Multi-Output Gaussian Processes,” arXiv:1911.06287.
- [\[link\]](#) Requiema, J. R., Tebbutt, W. C., Bruinsma, W. P., Turner, R. E. (2019). “The Gaussian Process Autoregressive Regression Model (GPAR).” *Artificial Intelligence and Statistics (AISTATS), 22nd International Conference on*.

**SELECTED PROJECTS**

- [\[link\]](#) *Stheno*: Probabilistic programming with Gaussian processes in Python
- [\[link\]](#) *Plum*: Implementation of multiple dispatch in Python

## ARXIV SUBMISSIONS

- [\[link\]](#) Bruinsma, W. P., Perim E., Tebbutt W., Hosking J. S., Solin A., Turner R. E. (2019) “Exact Scalable Inference in Multi-Output Gaussian Processes,” arXiv:1911.06287.
- [\[link\]](#) Bruinsma, W. P., Turner, R. E. (2018). “Learning Causally-Generated Time Series,” arXiv:1802.08167.

## PUBLICATIONS

- [\[link\]](#) Gordon, J., Bruinsma W. P., Foong, A. Y. K., Requeima, J., Dubois Y., Turner R. E. (2019) “Convolutional Conditional Neural Processes,” *International Conference on Learning Representations (ICLR)*, 8th. (Awarded oral presentation.)
- [\[link\]](#) Berkovich, P., Perim E., Bruinsma W. P. (2019) “GP-ALPS: Automatic Latent Process Selection for Multi-Output Gaussian Process Models,” *Advanced in Approximate Bayesian Inference (AABI)*, 2nd Symposium on.
- [\[link\]](#) Requeima, J. R., Tebbutt, W. C., Bruinsma, W. P., Turner, R. E. (2019). “The Gaussian Process Autoregressive Regression Model (GPAR).” *Artificial Intelligence and Statistics (AISTATS)*, 22nd International Conference on.
- [\[link\]](#) Bosma, S., Bruinsma, W. P., Hes, R. P., Bentum, M. J., and Lager, I. E. (2017). “Grating Lobe Prediction in 3D Array Antennas.” *Antennas and Propagation (EuCAP)*, 11th European Conference on.
- [\[link\]](#) Bruinsma, W. P., Hes, R. P., Bosma, S., Lager, I. E., and Bentum, M. J. (2016). “Radiation Properties of Moving Constellations of (Nano) Satellites: A Complexity Study.” *Antennas and Propagation (EuCAP)*, 10th European Conference on.
- [\[link\]](#) Bentum, M. J., Lager, I. E., Bosma, S., Bruinsma, W. P., and Hes, R. P. (2015). “Beamforming in Sparse, Random, 3D Array Antennas with Fluctuating Element Locations.” *Antennas and Propagation (EuCAP)*, 9th European Conference on.

## POSTERS

- [\[link\]](#) Tebbutt, W. C., Bruinsma, W. P., and Turner R. E. (2019). “Gaussian Process Probabilistic Programming.” *Probabilistic Programming (ProbProg)*, The International Conference on.

## MACHINE LEARNING PROJECTS

- [\[link\]](#) *Stheno*: Probabilistic programming with Gaussian processes in Python
- [\[link\]](#) *GPAR*: Implementation of GPAR in Python
- [\[link\]](#) *OLMM*: Implementation of the OLMM in Python

## PROJECTS

- [\[link\]](#) *Plum*: Implementation of multiple dispatch in Python
- [\[link\]](#) *LAB*: A generic interface for linear algebra backends in Python
- [\[link\]](#) *FDM*: Estimate derivatives with finite differences in Python
- [\[link\]](#) *FDM.jl*: Estimate derivatives with finite differences in Julia
- [\[link\]](#) *Varz*: Painless variables in PyTorch and TensorFlow
- [\[link\]](#) *Matrix*: Structured matrices in Python

- [link] *Algebra*: Algebraic structures in Python
- [link] *WBML*: A collection of machine learning algorithms
- [link] *Catalogue*: Resource management with Alfred
- [link] *wesselb.github.io*: My personal website

## THESES

- [link] Bruinsma W. P. (2019). “The Generalised Gaussian Process Convolution Model.” Department of Engineering, University of Cambridge. Thesis for the degree Master of Philosophy.
- [link] Bruinsma, W. P., Hes, R. P., Kroep, H. J. C., Leliveld, T. C., Melching, W. M., and aan de Wiel, T. A. (2015). “An Extensible Toolkit for Real-Time High-Performance Wideband Spectrum Sensing.” Faculty of Electrical Engineering, Mathematics and Computer Science, Delft University of Technology. Thesis for the degree Bachelor of Science.

## TEACHING

Lent 2019      **Inference (Supervisor)**

Part IIA, Engineering Tripos, University of Cambridge

Michaelmas '20 **Demonstrator**

MPhil in Machine Learning and Machine Intelligence, University of Cambridge

Michaelmas '20 **Demonstrator**

AI for the study of Environmental Risks (CDT), University of Cambridge

## FULL PORTFOLIO

See [wesselb.github.io/portfolio](https://wesselb.github.io/portfolio) for a full overview of my projects, arXiv submission, publications, posters, theses, talks, and write-ups.

