

# Magnus Ross

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## SUMMARY

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I am currently a PhD student at the University of Manchester, supervised by Mauricio Álvarez. I am interested in all aspects of probabilistic machine learning, but in particular enjoy working on problems which are related to, or inspired by, physics. In addition to my PhD, I work part time developing strategies and forecasting models for a small startup trading on the European energy market, where I enjoy applying the knowledge gained from my research in practice.

## EDUCATION

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### PhD in Machine Learning

Sep. 2020 – Present

*University of Manchester & University of Sheffield*

- Working in the machine learning group with Mauricio Álvarez on physics inspired Gaussian process models
- Initial project on learning the kernels of the nonlinear Volterra series using Gaussian processes, published at NeurIPS 2021
- Recent project on inferring the covariances of Gaussian processes nonparametrically for problems with multiple inputs and outputs, work currently in review
- Transferred from Sheffield to Manchester in April 2022 with my supervisor

### Visiting Researcher

May. 2022 – August. 2022

*Aalto University*

- Visited the group of Arno Solin to work on Gaussian process models for energy conserving dynamical systems
- Developed a fast and efficient inference method for probabilistic models of Hamiltonian systems, work currently in review

### MSci in Physics

Sep. 2016 – July 2020

*University of Bristol*

- Graduated with first class honours
- Highly commended master's project, entitled 'Deep Learning for event classification at LUX-ZEPLIN'

## PROFESSIONAL EXPERIENCE

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### Machine Learning Engineer

Dec. 2020 – Present

*Blue Copal Ltd*

- Responsible for machine learning at a startup trading on the European energy market
- Developed a number of trading strategies and forecasting models, using algorithms from all areas of machine learning

### Summer Research Intern

June 2019 – August 2019

*University of Bristol (Particle Physics Group)*

- Completed a funded 8 week research project entitled 'Searches for new physics with machine learning at the LHC'

### Physical Design Intern

June 2018 – August 2018

*Graphcore*

- Undertook a project investigating more efficient logical cells to be used on the Graphcore IPU chip as part of the physical design team

## SOFTWARE, TEACHING AND REVIEWING

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- Reviewer for AISTATS 2022, NeurIPS 2023, ICML 2023
- Teaching assistant on the unit 'Machine Learning' at the University of Bristol and the unit 'Machine Learning and Adaptive Intelligence' at the University of Sheffield
- Experienced in Python (incl. TensorFlow, Pytorch and Jax) and Julia.

## PEER REVIEWED PUBLICATIONS

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Bold denotes primary author(s).

- **Magnus Ross**, Michael T. Smith, and Mauricio Álvarez. 'Learning Nonparametric Volterra Kernels with Gaussian Processes' *Advances in Neural Information Processing Systems* 34, 2021
- **Magnus Ross**, **Thomas M. McDonald**, Michael T. Smith, and Mauricio Álvarez. 'Nonparametric Gaussian Process Covariances via Multidimensional Convolutions', 26th International Conference on Artificial Intelligence and Statistics (AISTATS), 2023
- **Magnus Ross**, and Markus Heinonen. 'Learning Energy Conserving Dynamics Efficiently with Hamiltonian Gaussian Processes', *Transactions on Machine Learning Research*, 2023