Alex Lewandowski

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Education

Ph.D. in Computing Science

University of Alberta — *01/2019 – Present*

- Specialization: Statistical Machine Learning
- Supervisor: Dale Schuurmans

M.Sc. in Statistics

University of Alberta — *09/2016 – 07/2018*

- Specialization: Statistical Machine Learning
- Supervisors: Ivor Cribben & Rohana Karunamuni
- Thesis: Recurrent and Bayesian Kernel Learning for Small Data with Applications to Neuroimaging

Honours Bachelor in Mathematics

University of Waterloo — *09/2012 – 09/2016*

- Major: Mathematical Economics

Research Interests

Reinforcement Learning Intrinsic Motivation, Model-based approaches, Uncertainty and exploration

Probabilistic methods Approximate inference, Bayesian deep learning, Generative modeling

Papers & Preprints

Bayesian and Recurrent Deep Kernel Learning

A. Lewandowski, I. Cribben — *In Preparation*

Wasserstein Style Transfer with Shared Critic

A. Lewandowski — *In Preparation*

Batch Normalized Deep Kernel Learning for Weight Uncertainty

A. Lewandowski — *12/2017*

- Second workshop on Bayesian Deep Learning (NIPS 2017)

Projects

Hierarchical BiGAN using Wasserstein Distance and the Concrete Distribution

Topics in Deep Learning with Prof. Dale Schuurmans — *1/2017 – 4/2017*

- Derived a Wasserstein formulation of bidirectional GANs and investigated hierarchical and discrete extensions.

Structured Adversarial Inference and Learning

Probabilistic Graphical Models with Prof. Russell Greiner — *1/2017 – 4/2017*

- Proposed and implemented a method of inference in graphical models using adversarial networks.

Completing Tensors with Indian Buffet Processes

Introduction to Machine Learning with Prof. Russell Greiner — *9/2016 – 12/2016*

- Extended an MCMC algorithm to estimate missing values in tensors using an Indian Buffet Process prior.

Exchange Rate Duration Under a Markov-Switching Multifractal: A GMM Approach

Honours Essay supervised by Prof. Dinghai Xu — *1/2016 – 4/2016*

- Derived a Generalized Method of Moments for the Markov-Switching Multifractal duration model.

Dealing with Zeros in Duration Data: A Nonparametric Approach

Topics in Econometrics with Prof. Tao Chen *1/2016 – 4/2016*

- Developed a nonparametric imputation method for duration data that leverages inherent long range dependencies.

Forecasting Exchange Rates Using AT-GARCH and Oil Prices

Topics in Financial Econometrics with Prof. Dinghai Xu *9/2015 – 12/2015*

- Implemented an asymmetric threshold GARCH volatility model to predict CAD/USD exchange rate using oil prices.

Work Experience

Research Assistant, Department of Computer Science

University of Alberta *08/2018 – Present*

- Supervisor: Dale Schuurmans
- Working on model-based deep reinforcement learning.

Teaching Assistant, Department of Mathematical and Statistical Sciences

University of Alberta *09/2016 – 04/2018*

- Lead help sessions in Introduction to Applied Statistics, assist with Statistics I/II, Applied Regression Analysis and Time Series Analysis.
- Provide one on one assistance with assignments for first and second year classes at the Decima Robinson Support Centre.

Research Assistant, Department of Mathematical and Statistical Sciences

University of Alberta *05/2017 – 07/2018*

- Supervisor: Ivor Cribben
- Implemented various Gaussian process and deep learning methods to classify patients based on fMRI data using TensorFlow.
- Developed stochastic variational methods for recurrent neural network parameterized kernels in Gaussian process classification.

Honors & Awards

Josephine Mitchell Scholarship
University of Alberta 2018

Profiling Alberta's Graduate Students Award
University of Alberta 2017

Josephine Mitchell Scholarship
University of Alberta 2017

Queen Elizabeth II Graduate Scholarship
University of Alberta 2016

Term Dean's Honour List
University of Waterloo 2015

President's Scholarship
University of Waterloo 2012