Antoine **Wehenkel**

PH.D. CANDIDATE · MACHINE LEARNING

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EDUCATION

Ph.D. student in Machine Learning - *ULiège, Liège* — Oct 18 - Oct 22
Advisor: Professor Gilles Louppe
Research interests: generative modeling, causal models and simulation-based inference.

Master in Computer Engineering - *ULiège, Liège* — Sep 16 - Jun 18
Summa Cum Laude - 88%

Exchange student in the Master in Data Science - *EPFL, Lausanne* — Sep 17 - Jun 18
Average score: 5.8/6 - 97%

Bachelor in Engineering - *ULiège, Liège* — Sep 13 - Jun 16
Magna Cum Laude - 81%

PUBLICATIONS

Neural Empirical Bayes: Source Distribution Estimation and its Applications to Simulation-Based Inference
Vandegar M, Kagan M, Wehenkel A, Louppe G.
Submitted, preprint arxiv:2011.05836.

Lightning Gravitational Wave Parameter Inference through Neural Amortization
Delaunoy A, Wehenkel A, Hinderer T, Nissanke S, Weniger C, Williamson A, Louppe G.
Workshop on Machine Learning and the Physical Sciences at NeurIPS 2020

Graphical Normalizing Flows.
Wehenkel A, Louppe G
Submitted, preprint arxiv:2006.02548.

You say Normalizing Flows I see Bayesian Networks
Wehenkel A, Louppe G.
*Workshop on Invertible Neural Networks, Normalizing Flows, and Explicit Likelihood Models at ICML 2020 (**Spotlight**)*

Unconstrained monotonic neural networks
Wehenkel A, Louppe G.
***Neural Information Processing Systems** (NeurIPS) 2019*

Parameter Estimation for Three Phase Untransposed Short Transmission Lines from Synchrophasor Measurements
Wehenkel A, Mukhopadhyay A, Le Boudec JY, Paolone M.
IEEE Transactions on Instrumentation and Measurement. 2020 Jan 23.

Recurrent machines for likelihood-free inference.
Pesah A, Wehenkel A, Louppe G.
*Workshop on Meta-Learning at NeurIPS 2018 (**Contributed talk**)*

TALKS

"Normalizing Flows and Bayesian Networks". CogSys seminar (DTU). Remote. October 2020.

"Normalizing Flows for Probabilistic Modeling and Inference". Montefiore (ULiège) journal club, Liège. April 2020.

"Neural Likelihood-Free Inference". GRAPPA (UvA) journal club, Amsterdam. November 2019.

"Unconstrained Monotonic Neural Networks". Benelearn 2019, Brussels. November 2019.

TECHNICAL SKILLS

Programming in Python, C++ and C.

Pytorch, Scikit-Learn, Pandas, etc...

General expertise in Deep Learning, Machine Learning, Optimisation, and Statistics.

TEACHING

Current: Deep Learning (ULiège), Introduction to Artificial Intelligence (ULiège).

Past: Computer Organization (ULiège), Electric Measurements (ULiège), Data Structures and Algorithms (ULiège), Electronic 2 (EPFL).

OTHER WORK EXPERIENCE

Development of an RFID fish tracker — Summer 2017
Laboratory of Veterinary Immunology (ULiège)
Electronic design, microcontroller programming, web server implementation (Django and PostgreSQL) and a monitoring system (Python).

Web Developper — Winter 2015
Wikipower" company
Implementation of a new design in CSS and HTML. Implementation of new features in javascript and PHP.

PERSONAL RESEARCH PROJECTS

Deep Learning for inverse problems in Science 2018-2022

Antoine Wehenkel - Gilles Louppe

In my research, I wish to advance simulation-based inference by exploring new means for implementing more effectively inductive bias into deep generative models. My main research interests are in generative modelling, causal models and simulation-based inference. See the list of publications for further details.

Parameter estimation of transmission lines from synchrophasor measurements 2017-2018

Antoine Wehenkel - Arpan Mukhopadhyay, Mario Paolone, Jean-Yves Le Boudec

I worked on the estimation of the admittance matrix of an electrical grid based on Phasor Measurements Unit measurements. Mathematically this corresponds to a linear inverse problem whose optimization is non-convex. See the corresponding publication for further details.

An algorithmic approach for harvesting renewable energy with electric vehicles 2016-2017

Antoine Wehenkel - Antoine Dubois, Raphael Fonteneau, Damien Ernst

I developed optimisation algorithms for the integration of Electric vehicle fleets in the electrical network. This project was done in collaboration with Engie Company.

REVIEWING

NeurIPS 2020; ICLR 2021; AISTATS 2021.

AWARDS

FNRS Research Fellowship (2018 - 2022) - Around 100 awards in Belgium each year.

NeurIPS Travel Award (2019).

Best Master's thesis awards from AIM and from AILg (2018) - One award for 40 candidates.

Winning team of the "Kaggle in class" machine learning course competition (ULiège, 2016 and 2018) - 64 teams.

Physics award for outstanding student (2013) - One award for more than 150 students.

Physics award at Belgian Olympiad (2012 and 2013) - Top-5 among hundreds of students in Belgium.

REFEREES

Gilles Louppe (g.louppe@uliege.be) - Ph.D. advisor.

Michael Kagan (makagan@slac.stanford.edu) - Collaborator.

Jean-Yves Le Boudec (jean-yves.leboudec@epfl.ch) - Master's thesis advisor.

OTHER ACTIVITIES AND HOBBIES

Co-organiser of the research unit's PhD meetings.

Padel, tennis and hiking.

Wine tasting.