

# Adriaan Ludl

R&D Scientist and Engineer

I develop algorithms based on machine learning and statistical inference to generate quantitative insight from data.

## SKILLS

**Causal Inference and Path Analysis**, Bayesian statistics, Mendelian Randomisation, Information Theory, Network Inference and Analysis

**Mathematical Modelling**: Structural causal models, Stochastic simulations of network processes, Iterative resolution of inverse problems

**Software Development**: Object Oriented Programming, Database Design

## EXPERIENCE

### Department of Informatics, University of Bergen, Norway

October 2019 - PRESENT

**Machine Learning, causal inference, path analysis methods for genomics and bioinformatics. Modeling gene regulatory networks.**

Lecturer and course responsible for INF115: **Databases and Modelling.**

### MesoBrain, University of Barcelona, Spain

September 2016 - September 2019

**Stochastic simulations and causal network inference for neuroscience.**

## EDUCATION

### Université Pierre et Marie Curie, Paris, France — *PhD in Physics*

October 2012 - September 2015

**Modeling, simulations and data analysis using HPC infrastructure for phase transitions in electrolyte solutions under extreme conditions.**

### Lund University, Sweden — *Master of Science in Physics*

August 2010 - September 2012

**Master thesis**: Simulation of General Relativistic Light Deflection

**Courses**: Statistical Physics, Computational Astrophysics, Riemannian Geometry, Quantum Field Theory, Protein Biophysical Chemistry

### ISAE-SUPAERO\*, Toulouse, France — *Master in Aeronautics and Space Engineering = Diplôme d'Ingénieur Supaéro*

September 2008 - September 2011

**Courses**: Object Oriented Programming, Systems Theory, Functional Analysis, Fluid dynamics, Partial Differential Equations

### Université Paul Sabatier, Toulouse — *Bachelor in Mathematics*

September 2008 - September 2010

<https://adluinf.github.io>

CBU - Dept. of Informatics  
Thormøhlensgate 55  
5008 Bergen, Norway

## Programming skills

Python, Java, C, Fortran

Unix, git, bash, SQL, HPC

## AWARDS

**PhD scholarship** funded by the Cluster of Excellence MATISSE

**Bourse Major**: excellence scholarship of the Ministry of Foreign Affairs of France.

**Bourse d'Excellence**: scholarship of the Agence pour l'enseignement français à l'étranger.

## LANGUAGES

**German**: native

**French**: native

**English**: fluent (C2)

**Norwegian**: intermediate

**Spanish**: basic

\*:Institut Supérieur de l'Aéronautique et de l'Espace, formation SUPAERO

## TRAINING

**2020: Decoding Communication in Non-Human Species** — [Simons Institute](#), UC Berkeley

Bringing together Machine Learning, Signal Processing, Data Science, Linguistics, and Acoustics..

**2021: Project Management Workshop** — Katia Van Belle ([propellor](#))

AGILE, Milestone, Lean Planning, Visualisations of Workflows, Non-Violent Communication

**2016: Machine Learning** — Andrew Ng ([coursera](#), Stanford University)

Machine Learning (ML) Algorithms, Logistic Regression, Artificial Neural Network

## SELECTED PUBLICATIONS

1. Ludl and Michoel (2021) Mol. Omics, 17, 241–251. *Comparison between instrumental variable and mediation-based methods for reconstructing causal gene networks in yeast.* [doi:10.1039/d0mo00140f](#) – [arXiv:2010.07417](#) – [PMID:33438713](#) – [zenodo.org](#) – [github](#)
2. Ludl and Soriano (2020) Front. Comput. Neurosci., vol. 14, 77. *Impact of Physical Obstacles on the Structural and Effective Connectivity of in silico Neuronal Circuits.* [doi:10.3389/fncom.2020.00077](#) – [PMID:32982710](#)
3. Tibau, Ludl, Orlandi, Rüdiger, Soriano (2018) IEEE TNSE, vol. 7 (1). *Neuronal spatial arrangement shapes effective connectivity traits of in vitro cortical networks.* [doi:10.1109/TNSE.2018.2862919](#)
4. Ludl, Bove, Corradini, Salanne, Saitta, Bull, Klotz (2017) PCCP, no. 19, (2017). *Probing ice VII crystallization from amorphous NaCl–D<sub>2</sub>O solutions at gigapascal pressures.* [doi:10.1039/C6CP07340A](#)

## SELECTED CONFERENCES

**2021:**

Intelligent Systems for Molecular Biology Conference (ISMB)

**2020:**

Neural Information Processing Systems (NeurIPS)

Machine Learning in Computational Biology (MLCB)

Oxford Machine Learning Summer School, Oxford, UK

ISMB Conference and Hackathon

**2019:**

Annual Computational Neuroscience Meeting, Barcelona, Spain

International Conference on Complex Networks, Tarragona, Spain

**2017:**

PyData Barcelona, Spain

**2016:**

PyData, Paris, France