Rik Voorhaar

Languages

Fluent English

Dutch

Intermediate French

Elementary Japanese

Russian

Skills

Algorithms

Data science

Machine learning

Mathematics

Research

Science communication

Software development

Statistics

Teaching

Programming Languages

Advanced Python

Intermediate LaTeX

Mathematica

Beginner C / C++

R

Tools

General Bash

Docker

Linux

Windows

Libraries CVXPY

Cython

Networkx

NumPy

Pandas

PyTorch

Sagemath

SciPy

Tensorflow

University of Geneva

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Resume

Personal statement

**Mathematics** PhD student specialized in researching **numerical** and **machine learning** algorithms. Several years experience in **Python software development**. Excellent skills in **data science** and **science communication**.

Experience

2018—present **Doctoral Candidate in Mathematics** *University of Geneva*

*Research interests*: Numerical analysis, tensor networks, optimization, machine learning.

Started PhD in pure mathematics, switched after two years to applied mathematics. Using advanced numerical methods to develop novel machine learning techniques. Spend a large fraction of research time developing open-source software. Developed 3 fully-featured numerical Python software libraries, leading to 3 publications with 4th in progress. Contributed code to 2 scientific open-source projects. Participated in interdisciplinary case study to help a biotech startup specialized in developing biomarkers.

2021—present **Senior scientific editor** *The Science Breaker*

Edited 6 articles for open-access science communication journal. Editing involves collaborative process to make summaries of scientific research suitable for a lay audience.

2020—present Data science blog *rikvoorhaar.com*

Wrote blog posts on advanced topics related to data science. Wrote articles both for lay audience and for a wide scientific audience. The blog receives an average 30 views and 600 search impressions per day.

Education

2015—2018 MSc (Hons) Mathematical Sciences, Utrecht University, *cum laude*

2016—2017 Masterclass Geometry, Topology and Physics*,* University of Geneva*.*

2012—2015 BSc Mathematics, Utrecht University, *cum laude.*

BSc Physics and Astronomy, Utrecht University, *cum laude.*

2006—2012 International Baccalaureate, International School Hilversum.

Certificates

2021 **Neuroscience and Neuroimaging**, John Hopkins University*, on Coursera.*

2020 **Genomic Data Science**, John Hopkins University*, on Coursera.*

*2019* **Advanced Machine Learning**, Higher School of Economics*, on Coursera.*

Publications

2022 *TTML: tensor trains for general supervised machine learning*

arXiv:2203.04352 joint with Bart Vandereycken

2021 *Recovering data you have never seen*

*published in* The Science Breaker.

2021 *On certain Hochschild cohomology groups for the small quantum group*

arXiv:2104.05113. joint with Nicolas Hemelsoet.

2021 *A computer algorithm for the BGG resolution*

Published in the Journal of Algebra, joint with Nicolas Hemelsoet.

2018 *Parallel 2-transport and 2-group torsors*

arXiv:1811.10060.