Rik Voorhaar

Languages

Fluent English

Dutch

Intermediate French

Elementary Japanese

Russian

Skills

Algorithms

Data science

Machine learning

Mathematics

Research

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

+31 6 3986 5964

Rik.Voorhaar@unige.ch

rikvoorhaar.com

Resume

Personal statement

**Mathematics** PhD student specialized in researching **numerical** and **machine learning** algorithms. Several years’ experience **Python software development**. Proficient 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.

I started my PhD in pure mathematics, but after two years I switched advisor and now I do research applied mathematics. I use advanced numerical methods to develop novel machine learning techniques. I spend a large part of my research time developing software. I have developed two extensive Python software libraries, leading to 2 publications and a 3rd in progress. I contributed code to 2 open-source projects.

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

I edit articles for a science communication journal. Authors submit layman summaries of their research to this journal, and my job is to make the article easier to understand and read a lay audience.

2020—present Data science blog *rikvoorhaar.com*

I often do data science projects as a hobby, and I maintain a blog where I talk about my hobby projects. The target audience varies from post to post, but I always try to keep explanations accessible to a wide audience.

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

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.