Rik Voorhaar

Resume

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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

2018–2022 *(expected)* **Doctoral Candidate in Mathematics** *University of Geneva*
Research interests: Numerical linear algebra, tensors, optimization, machine learning.

Started PhD in pure mathematics, switched after two years to applied mathematics. Uses advanced numerical methods to develop novel machine learning techniques. Spend a large fraction of research time developing open-source software, available on my GitHub repository. Developed 3 fully-featured numerical Python software libraries, leading to 3 publications with 4th in progress. Contributed code to 2 scientific open-source projects.

2021–present **Senior scientific editor** *The Science Breaker*
Edited 8 articles for open-access science communication journal. Editing involves collaborative process to make summaries of published scientific research suitable for a lay audience.

2020–present **Data science blog** *rikvoorhaar.com*
Wrote blog posts on advanced topics related to data science and numerical mathematics. Wrote articles both for lay audience and for a wide scientific audience. The blog receives an average 900 views and 18000 search impressions per month.

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 *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.

Languages

Bilingual	English Dutch
Intermediate	French
Elementary	Japanese Russian

Skills

Algorithms
Data science
Machine learning
Mathematics
Optimization
Research
Science communication
Software development
Statistics
Teaching

Programming Languages

Advanced	Python
Intermediate	LaTeX Mathematica
Beginner	C / C++ R

Tools

General	Bash Docker Git Linux Windows
Libraries	CVXPY Cython JAX Networkx NumPy Pandas PyTorch Sagemath SciPy Tensorflow