

# Dr. Edo van Veen | CV

## Personal information

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Scientific software engineer with experience in machine learning, physics-based modelling and microscopy data analysis. I have a knack for analytical problem solving and strong communication skills. Passionate about science, programming, music and bouldering.



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## Work experience

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- **Scientific Software Engineer & Project Leader at VORtech** Sep 2022 – present  
VORtech provides consultancy on complex computational software for a variety of clients. I work on projects with many different organisations, ranging from university institutes to government bodies to tech companies. This involves:
  - leading and contributing to projects involving complex code bases in multidisciplinary teams
  - cultivating strong client relationships
  - staying up-to-date with industry trends and advancements
- **Scientific Programmer at TU Delft** June 2020 – Aug 2022  
I was responsible for the development and maintenance of data analysis software at the Nynke Dekker lab. We used a wide variety of statistical tools and modelling methods to analyze and simulate single-molecule microscopy data, to study DNA replication using state-of-the-art biophysics.
- **Data scientist at Asset Insight** Feb 2019 – May 2020  
I developed machine learning applications for preventive maintenance in the infrastructure sector, focusing mostly on the railways.
- **PhD in computational condensed matter physics** Nov 2014 – Jan 2019  
Atomically thin materials have the potential to make future electronics and optics more efficient and sustainable. I studied large-scale quantum mechanical models of these materials using computer simulations. My responsibilities also included supervising student research projects and teaching master's level courses.

## Recent projects

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- **Crato: automated risk analysis for TenneT**  
Software for running automated risk analysis of possible future outages in high-voltage electricity networks, managed by TenneT. The library includes a GUI for making calculations accessible to users without programming experience.
- **NAClib: Non-Affine Corrections for microscope images**  
A library for applying alignment corrections for single-molecule fluorescence microscopy. This method employs linear combinations of Zernike polynomial gradients to decompose the distortion between two images (see <https://github.com/edovanveen/naclib/>).
- **Machine learning model for classifying train track defects**  
Software for identifying damage types in train tracks using impedance data, measured with Eddy current. The results are used to plan maintenance on the train tracks.
- **TBPLaS: a tight-binding propagation simulator for Python**  
Software for calculating properties of condensed matter systems containing tens of millions of atoms. The (Fortran) code is optimized for parallel computing on clusters and has a Python user interface.

## Education

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- **Radboud University** **Nijmegen, The Netherlands**
  - PhD in computational condensed matter physics 2014 – 2019
  - Master's in theoretical high energy physics 2012 – 2014
  - Bachelor's in physics and astronomy, with propaedeutics in mathematics 2008 – 2012
- **Wuhan University** **Wuhan, China**
  - Visiting PhD scholar 2017 – 2018
- **University of Sydney** **Sydney, Australia**
  - Master's internship 2012 – 2013

## Technical and language skills

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- **Computer Languages**
  - Fluent in: Python (10 years of experience)
  - Experience with: Fortran, C, C++, MatLab
- **Human Languages**
  - Fluent in: Dutch, English
  - Basic ability with: French, German, Chinese
- **Other technical skills**
  - Good understanding of machine learning principles; experience with agile/scrum; Linux, OS X and Windows; Git; Microsoft Azure;  $\LaTeX$ .

## Publications

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- **Google scholar page:** [scholar.google.com/citations?user=jmz69pwAAAAJ](https://scholar.google.com/citations?user=jmz69pwAAAAJ)
- **Publications:** 17 (5× first author)
- **Citations:** 603
- **Recent highlights**
  - K.A. McCluskey, E. van Veen (joint first author), J.P. Cnossen, W.J. Wesselink, F.M. Asscher, C.S. Smith, N.H. Dekker, 'Global correction of optical distortions in multicolor single-molecule microscopy using Zernike polynomial gradients.' *Optics Express* 29(25), 42251-42264 (2021)
  - L. Kuijpers, E. van Veen, L.A. van der Pol, N.H. Dekker. 'Automated cell counting for Trypan blue-stained cell cultures using machine learning.' *Plos one* 18, no. 11 (2023): e0291625

## Interests and extra-curricular activities

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- **Board and committee work** for the S.V. Marie Curie physics study association
- **Hobbies and interests** include bouldering, home brewing, sourdough baking, and playing jazz guitar

## References

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References available on request.