dr. Edo van Veen | CV

Personal information

Currently working as data scientist in the infrastructure sector. Experienced programmer with a PhD in theoretical quantum physics and a knack for analytical problem solving. Passionate about science, machine learning, music and bouldering.

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[redacted] Den Haag

1990-[redacted], Eindhoven

Work experience

- **Data scientist at Asset.Insight.** Feb 2019 – present
  In my role as data scientist I develop machine learning applications for the infrastructure sector in a cloud environment. Currently working at ProRail for two days a week on consultancy basis. My responsibilities also include presenting at client events and giving data science workshops.
- **PhD in computational condensed matter physics** Nov 2014 – Jan 2019
  Atomically thin materials have exciting future applications in electronics and optics. I collaborated with an international team of researchers to run computer simulations on large-scale quantum mechanical models of these materials, using the Dutch national supercomputer. My responsibilities also included teaching and supervising students.
- **Teaching assistant at Radboud University** 2009 – 2014
  Teaching physics and mathematics courses at both the bachelor and master level.
- **Freelance web developer and graphic designer** 2008 – 2014
  Designing websites, logos and beer labels for small businesses.

Recent projects

- **Classifying train track defects in Eddy current data**
  In this project I developed machine learning software for identifying damage types in train tracks using impedance data, measured with Eddy current. The model combines a CNN with an SVM to identify defects and then classify their urgency.
- **Automatic blurring of faces and license plates**
  Our measurement car takes 360° photos of the road environment. Before we can disclose pictures to clients, we need to blur faces and license plates, in order to comply with privacy regulations. I employed an object detection CNN to make an application that automatically processes these photos.
- **Tipsi: a tight-binding propagation simulator for Python**
  I was the lead developer of 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 an intuitive Python user interface (see `www.edovanveen.com/tipsi`).
- **EdoNet: a minimal neural network for CuPy**
  As a hobby project, I wrote my own neural network library from the ground up using only CuPy for Python 3. CuPy provides an easy way to run computations on GPU. See `www.github.com/edovanveen/edonet`.

Education

- **Radboud University** **Nijmegen**
  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

- **Computer Languages**
  Fluent in: Python, Fortran, HTML & CSS, LaTeX
  Familiar with: C++, Mathematica, JavaScript (jQuery)
- **Human Languages**
  Fluent in: Dutch, English
  Basic ability with: French, German, Chinese
- **Other technical skills**
  Experience with Linux, OS X and Windows; Git; SQL databases; Microsoft Azure products such as VMs, data lakes and Databricks

Interests and extra-curricular activities

- **Board and committee work for S.V. Marie Curie**
  For two years, I was the vice-president of the physics study association at Radboud University. My main responsibility was sponsor liaison. Also, I was a member of multiple committees, editor in chief for the student magazine, graphic designer for the association, and organizer/translator for a study trip to China.
- **Hobbies and interests**
  Travelling, bouldering, home brewing and playing the jazz-guitar.

Publications

- H. Shi, Z. Zhan, Z. Qi, K. Huang, E. van Veen, J.A. Silva-Guillén, R. Zhang, P. Li, K. Xie, H. Ji, M.I. Katsnelson, S. Yuan, S. Qin, Z. Zhang, *'Large-area, periodic, and tunable pseudo-magnetic fields in low-angle twisted bilayer graphene,' arXiv:1905.04515 (2019)*
- E. van Veen, A. Nemilentsau, A. Kumar, R. Roldán, M.I. Katsnelson, T. Low, S. Yuan, *'Tuning 2D hyperbolic plasmons in black phosphorus,' Physical Review Applied 12, 014011 (2019)*
- G. Slotman, A. Rudenko, E. van Veen, M.I. Katsnelson, R. Roldán, S. Yuan, *'Plasmon spectrum of single-layer antimonene,' Physical Review B 98, 155411 (2018)*
- E. van Veen, J. Yu, M.I. Katsnelson, R. Roldán, S. Yuan *'Electronic structure of monolayer antimonene nanoribbons under out-of-plane and transverse bias,' Physical Review Materials 2, 114011 (2018)*
- J. Yu, E. van Veen, M.I. Katsnelson, S. Yuan *'Effective lattice Hamiltonian for monolayer tin disulfide: Tailoring electronic structure with electric and magnetic fields,' Physical Review B 97, 245410 (2018)*
- T. Westerhout, E. van Veen, M.I. Katsnelson, S. Yuan *'Plasmon confinement in fractal quantum systems,' Physical Review B 97, 205434 (2018)*
- E. van Veen, A. Tomadin, M. Polini, M.I. Katsnelson, S. Yuan *'Optical conductivity of a quantum electron gas in a Sierpinski carpet,' Physical Review B 96, 235438 (2017)*
- J. Yu, L. Qu, E. van Veen, M.I. Katsnelson, S. Yuan *'Hyperhoneycomb boron nitride with anisotropic mechanical, electronic, and optical properties,' Physical Review Materials 1, 045001 (2017)*
- S. Yuan, E. van Veen, M.I. Katsnelson, R. Roldán *'Quantum Hall effect and semiconductor-to-semimetal transition in biased black phosphorus,' Physical Review B 93, 245433 (2016)*
- E. van Veen, S. Yuan, M.I. Katsnelson, M. Polini, A. Tomadin *'Quantum transport in Sierpinski carpets,' Physical Review B 93, 115428 (2016)*

References

- References available on request.