Rianne van den Berg Curriculum Vitae

Personal information

Name:	Rianne van den Berg
Birthdate/-place:	26 January 1988, Delft
Nationality:	Dutch
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Work experience

2016 - present

Postdoctoral researcher in machine learning, University of Amsterdam

My postdoctoral research focusses on the application of deep learning methods to data that has a graph structure, such as recommender systems, knowledge graphs and social networks. Graph convolutional neural networks can be seen as a generalization of convolutional neural networks for data that lies on a regular grid, such as images, to data that can be represented by more general irregular graphs. We are currently applying this framework to recommender systems, where the interaction data between users and items can be represented by a bipartite graph. I am also involved in applying graph convolutional neural networks to knowledge graphs.

2016

Data science fellow, Science to Data Science, Pivigo

During a 5 week workshop in London organized by Pivigo I worked in a team of 4 for the startup Waymarktech. Their core product revolves around automating the search for relevant financial regulations for their clients, and establishing the appropriate course of action that the client needs to follow to become compliant. We delivered a proof of principle of the ability to extract information from regulations using techniques from Natural Language Processing, such as tf-idf, PCA, word2vec and doc2vec.

2012 - 2016

PhD in theoretical physics, University of Amsterdam

In my PhD I described the theory behind various experiments during three projects:

1. Quantum dots can act like quantum bits, the building blocks of a quantum computer. The project focused on the protection of a quantum dot from its environment, enabling a longer memory.
2. Modeling the interactions between atoms that were manipulated by a microscope, forming "handmade" patterns. A relatively simple theory agreed surprisingly well with the complicated experiment.
3. Modeling a quantum version of the Newton's cradle desk toy, with atoms colliding instead of metal spheres. The focus was on providing a better understanding of how atoms can be kicked out of their equilibrium positions.

Other activities:

- Writing scientific publications, among which an article in the high-impact journal Nature Physics.
- Presenting research at (international) conferences and workshops, winning the Young Speaker's Prize at an interdisciplinary workshop.
- Teaching assistent for Electrodynamics, Quantum Mechanics and Statistical Physics (2 semesters).

Education

2010 - 2012 **Delft University of Technology**
Master of Science in Applied Physics (average grade 8.5)
Casimir PrePhD track with 3 month research project at Northwestern University, IL, USA

2007 - 2010 **Utrecht University**
Bachelor of Science in Physics and Astronomy (average grade 8.0, *cum laude*, 33.75 additional ECTS)
Honours Program of Experimental Physics and Astronomy

2007 **Alliance Francaise de la Haye, The Hague**
DALF C1 (Diplôme Approfondi de Langue Francaise)/ French CEFRL C1 certificate

Honors and awards

2015 **Best Poster Prize**, *WEH-Seminar, Bad Honnef*
Workshop funded by the Wilhelm and Else Hereaus-Stiftung.

2014 **QM&QI Young Speaker's Prize**, *University of Amsterdam*
Quantum Matter and Quantum Information workshop.

2011 **Hendrik Casimir Prize**, *Casimir Research School*
Award for the best Master student.

Technical skills

Proficient: PYTHON, C++, Tensorflow, LaTeX
Intermediate: FORTRAN, MATHEMATICA, MATLAB

Languages

Dutch (native), English (fluent), French (proficient), German (basic)

Personal interests

Sport climbing, hiking, running

Scientific publications

Graph Convolutional Matrix Completion
R. van den Berg, T.N. Kipf and M. Welling
*arXiv:*1706.02263 (2017)

Modeling Relational Data with Graph Convolutional Networks
M. Schlichtkrull, T.N. Kipf, P. Bloem, R. van den Berg, I. Titov and M. Welling
*arXiv:*1703.06103 (2017)

Atomic spin chain realization of a model for quantum criticality
R. Toskovic, R. van den Berg, A. Spinelli, I.S. Eliens, B. van den Toorn, B. Bryant, J.-S. Caux and A.F. Otte
Nat. Phys. **12** 656-660 (2016)

Separation of timescales in a quantum Newton's cradle
R. van den Berg, B. Wouters, I.S. Eliëns, J. De Nardis, R.M. Konik and J.-S. Caux
Phys. Rev. Lett. **116** 225302 (2016)

Competing interactions in semiconductor quantum dots
R. van den Berg, G.P. Brandino, O. El Araby, R.M. Konik, V. Gritsev and J.-S. Caux
Phys. Rev. B **90** 155117 (2014)

Probing paring correlations in Sn isotopes using richardson-Gaudin integrability
S. De Baerdemacker, V. Hellemans, R. van den Berg, J.-S. Caux, K. Heyde, M. Van Raemdonck, D. Van Neck and P. A. Johnson
Journal of Physics: Conference Series **533** 012058 (2014)