Jelle H. Piepenbrock

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Education

MSc in Computer Science **February 2018 - Present**
Radboud University *Nijmegen, The Netherlands*

Specialized in machine learning. This is a research master in computing science, with one year and a quarter year of courses and three quarters of research with an internship in a research group. Currently focusing on writing my Master's thesis, which is about reinforcement learning for theorem proving. Current grade point average: 8.72/10 (4.0). Expected graduation date: July 2020.

MSc in Genomics **September 2016 - Present**
Radboud University *Nijmegen, The Netherlands*

Specialized in large-scale genomic data analysis and machine learning. This is a research master in genetics, with courses and research at a department of choice. Master's thesis work on the topic of DNA pattern recognition using convolutional neural networks was awarded with a 9/10 grade. Current grade point average: 8.85/10 (4.0). Expected graduation date: May 2020.

BSc in Molecular Biology **September 2012 - June 2015**
Radboud University *Nijmegen, The Netherlands*

Specialized in bioinformatics, protein structure modeling and bio-organic chemistry. Bachelors's thesis on the topic of synthesizing self-assembling polymer capsules for nanomotors and medicine capsules was awarded with a 8/10 grade. Presented the work along with a poster at academic conference in Easton, MA, USA. Graduated *cum laude* and was part of the Honours programme.

Professional Experience

Startup data science **June 2017 - Present**
GraphKite *Nijmegen, The Netherlands*

Founded a company together with three fellow students for machine learning consultancy. Among other projects, completed a four month assignment for a major Dutch insurance company. Currently doing a project on fall prevention for the elderly using Internet of Things devices.

Research Experience

Research Intern **June 2019 - October 2019**
Facebook AI Research *Prague, Czech Republic*

- Performed research under the guidance of Dr. Tomas Mikolov
- Researched and implemented ways to analyze the compression rate of complex dynamical systems, for example cellular automata.
- Investigated extending recurrent neural networks with memory modules and differentiable capabilities for changing their own weights, for meta-learning purposes (worked in PyTorch).
- Planning to submit part of the work for publication

Research Intern **Feb 2018 - September 2018**
Research Group Molecular Developmental Biology, RIMLS *Nijmegen, The Netherlands*

- Performed research under the guidance of Assistant Professor Dr. Simon van Heeringen
- Research involved reconstructing genetic regulatory networks from large-scale single cell RNA-seq data and predicting their behavior.
- This involved implementing statistical models (such as the negative binomial count regression models and additive index models) in TensorFlow.
- Implemented distributed computing to run experiments on multiple (CPU and GPU) nodes.
- Compared the method I had developed to other approaches in the field using benchmark datasets.

Research Intern **Nov 2016 - August 2017**
Research Group Human Genetics, Radboud Academic Hospital *Nijmegen, The Netherlands*

- Performed research under the guidance of Assistant Professor Dr. Kees Albers
- Research focused on DNA pattern recognition using convolutional neural networks.
- This involved implementing convolutional neural networks in TensorFlow and Torch.
- Tested some of the methods developed on in-house patient data to scan for genetic risk factors for brain disease.

Research Intern **Feb 2015 - June 2015**
Research Group Bio-Organic Chemistry, IMM *Nijmegen, The Netherlands*

- Performed research under the guidance of Professor Dr. Daniela Wilson
- Research focused on analysis of self-assembling polymer vesicles
- Work was presented with poster at Gordon ASN Conference, 2015.

Startup data science

- Researched and implemented statistical risk models for an insurance company.
- Implemented models to capture market decision processes for an insurance company
- Investigated signal processing methods for high frequency sensor data.

Skills and Languages

- **Programming:** Python, Julia, Java, C++, Ruby
- **Python Frameworks:** PyTorch, TensorFlow
- **Software:** Git, TEX
- **Languages:** Dutch (native speaker), English (Cambridge CAE Grade A), German (mediocre)
- **Online Courses:** UC BerkeleyX Software Engineering (CS169.1X and CS169.2X), Toronto University Quantum Machine Learning (UTQML101x)

Extracurricular activities

Educational Program Committee Molecular Science **August 2014 - August 2015**
Radboud University *Nijmegen, The Netherlands*

Handled student complaints and monitored the quality of chemistry and biology education.

Head of Student Travel Committee **December 2013 - November 2014**
SIGMA Student Organization *Nijmegen, The Netherlands*

Led the committee that organizes educational travel for students. The committee organized visits to educational institutions in Paris, Heidelberg and Berlin.

Achievements

Kaggle data science competition **February 2017 - June 2017**
Kaggle *Online*

Competed with a team in two international machine learning competitions in 2017 and got two top 2% scores.

Grants

R&D joint venture grant: €164.582 **August 2018 - Present**
Graphkite *Nijmegen, The Netherlands*
Our company, together with two others, was awarded a grant from the provincial government for fall prevention for the elderly in December 2018.

Teaching

- Teaching assistant Genomics and Big Data, 2018
- Teaching assistant Bioinformatics, 2015, 2017
- High school tutor physics, mathematics, chemistry, biology 2015
- Teacher bioinformatics guest classes for high school classes 2013-2016

Conferences

Poster presentation

- Gordon Conference on Artificial Switches and Nanomotors, Easton, MA, USA, June 2015
  Presented bachelor thesis work on biodegradable self-assembling polymer vesicles, which could be loaded with medicine or used as nanomotors.

Attended

- Conference on Artificial Intelligence and Theorem Proving, Obergurgl, Austria, April 2019

References

Dr. Tomas Mikolov
Research Scientist
Facebook AI Research / CIIRC
Jugoslávských partyzánů 1580/3, 160 00 Dejvice, Czech Republic
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Professor Dr. Tom Heskes
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Professor Dr. Ir. Arjen P. de Vries
Professor Information Retrieval; Research Director, CS Department
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Other

- I enjoy looking for rare music recordings and playing the guitar
- I read about history and enjoy telling people (semi)relevant facts
- I enjoy salsa dancing, which I have done for several years.