PhD candidate in Deep Learning
Faculty of Science – Informatics Institute

Publication date 24 June 2015
Closing date 31 October 2015
Level of education Hours
University 38 hours per week
Salary indication €2,125 to €2,717 gross per month
Vacancy number 15-241

The Faculty of Science of the Universiteit van Amsterdam (UvA) is one of Europe’s foremost institutions of higher education and research in its chosen fields of specialization. It plays an active role in international science networks and collaborates with universities and industry. The Faculty has approximately 4,000 students and 1,500 staff members spread over four departments and ten research institutes. Each institute has its own research programme, a substantial part of which is externally funded by the Netherlands Organization for Scientific Research (NWO), the Dutch government, the EU and various private enterprises.

The Informatics Institute is one of the large research institutes with the faculty, with a focus on complex information systems divided in two broad themes: 'Computational Systems' and 'Intelligent Systems.' The institute has a prominent international standing and is active in a dynamic scientific area, with a strong innovative character and an extensive portfolio of externally funded projects.

The Amsterdam Machine Learning Lab (AMLAB) of II conducts research in the area of large scale modelling of complex data sources. This includes the development of new methods for probabilistic graphical models and nonparametric Bayesian models, the development of faster (approximate) inference and learning methods, deep learning, causal inference, reinforcement learning and multi-agent systems and the application of all of the above to large scale data domains in science and industry ('Big Data problems').

AMLAB is embedded in the Intelligent Systems Lab Amsterdam (ISLA). ISLA conducts research in sensory information processing and autonomous systems. It produces theoretically as well as applied research. ISLA has an outstanding group of researchers and collaborates with national and international research institutes and companies.

Max Welling is also co-director of the QUVU lab, a joint research lab between the University of Amsterdam and Qualcomm Technologies focussed on deep learning and computer vision. While the current position is not part of QUVU, the PhD candidate is expected to interact with this group of researchers.

Project description
Symmetries, Synthesis and Semi-Supervision for Improving Statistical Efficiency of Deep Learning

Deep learning has been incredibly successful when the number of data-cases (N) is large, but much less so in a regime when N is relatively small compared to the number of features, p. To understand the complexities of the real world, future AI systems will have to become much more statistically efficient (i.e. learn more from less data). We identify three research themes to achieve that goal S1: Model the Symmetry properties inherent in data, S2: Inject expert knowledge by learning how to Synthesize data, S3: Use Semi-supervised learning to exploit unlabeled data. The candidate is expected make theoretical and practical progress on these topics and apply these new insights to a real world problem where the p>>N issue is key, such as MRI data.

The PhD candidate will be supervised by Prof. M. Welling.

Requirements
Candidates are required to have a master's degree in statistics or computer science (preferably with a specialization in artificial intelligence and/or machine learning).

Necessary qualifications for candidates include excellent grades, proven research talent, affinity with computational statistics or machine learning and excellent programming skills.

Candidates are expected to have an excellent command of English, and good academic writing and presentation skills. Applicants are kindly requested to motivate why they have chosen to apply for this specific position.

Further information
Prof. M. Welling
T: +31 (0)20 525 8256

Appointment
The appointment will be full-time (38 hours a week) for a period of four years (initial employment is 18 months and after a positive evaluation, the appointment will be extended further with 30 months) and should lead to a dissertation (PhD thesis). An educational plan that includes attendance of courses and national and international meetings will be drafted. The PhD candidate is also expected to assist in teaching of undergraduates. The salary is in accordance with the university regulations for academic personnel. The salary will range from €2,125 (first year) up to a maximum of €2,717 (last
year) before tax per month (scale P) based on a full-time appointment. There are also secondary benefits, such as 8% holiday allowance per year and the end of year allowance of 8.3%. The Collective Labour Agreement for Dutch Universities is applicable.

English is the working language within the Informatics Institute. Moreover, since Amsterdam is a very international city where almost everybody speaks and understands English, candidates need not be afraid of the language barrier.

Some of the things we have to offer:
- very friendly, interactive and international working environment;
- new building located near the city center (20 minutes by bicycle) of one of Europe's most beautiful and lively cities;
- access to high-end computing facilities (e.g., cluster with 4,000+ cores).

**Job application**

Applications should include the following information, in separate PDF files (not zipped), using surname, initials and a self-evident word as file names, e.g., Smith J CV:
- a curriculum vitae (including an url allowing download of pdf of M.Sc. thesis -- if relevant);
- a letter of motivation (at most 1 page) explaining why you are interested in this position;
- a research statement (at most 2 pages), explaining your research interests and how you think they can be related to the topics mentioned in the Job description above;
- a list of all university courses taken, including a transcript of grades;
- the name and contact details (including email address) of two – three referees who can provide details about your profile (one of whom should be the main supervisor of your Master thesis).

Completed applications should only be submitted via application-sciences@uva.nl and should state your name, vacancy number 15-241 and the position you are applying for in the subject field. The committee does not guarantee that late or incomplete applications will be considered.

Applications will be accepted until 31 October 2015.

*No agencies please*

**Apply now**