PhD Scholarship on Model-based Cognitive Neuroscience

The Institute of Artificial Intelligence of the Faculty of Science and Engineering offers a four-year scholarship for a PhD position on model-based cognitive neuroscience.

Model-based cognitive neuroscience is the area of research that bridges the disciplines of computational cognitive modeling and cognitive neuroscience. Cognitive models – be it symbolic process models, mathematical models, or neural network models – are notoriously hard to evaluate based on behavioral measures alone. For that reason, researchers have turned to neuroscience (M/EEG, fMRI) as an additional source of information. At the same time, neuroimaging data is often so complex that it is difficult to fully account for with traditional analysis methods. As a solution, cognitive and mathematical models have been used within the analysis stream to interpret neural measures directly. This dual approach, using neuroscience to inform models and models to inform neuroimaging analyses, is very powerful, and has led to the emerging field of model-based cognitive neuroscience (see a recent special issue of the *Journal of Mathematical Psychology* for an introduction: Palmeri, Love, & Turner, 2017; Turner, Forstmann, Love, Palmeri, & van Maanen, 2017).

The PhD position is available in the cognitive modeling group, under supervision of Jelmer Borst. The goal of our group is to better understand cognitive processes in the human mind. To achieve this, we combine computational modeling with fMRI, EEG, and MEG data, and also apply machine learning techniques to analyse neural data. Top candidates will be invited to write and develop their own research project within the general scope of this research line.

The selection procedure for the scholarship is as follows:

1. Candidates apply by submitting a cover letter and CV (see below for details).
2. Based on the cover letters, several candidates will be invited to write a short research proposal within the topic of model-based neuroscience.
3. These candidates will be asked to present this proposal as part of the job interview.
4. After the selection, the candidate's proposal will be further developed in collaboration with the PhD advisors: Jelmer Borst, Niels Taatgen, and Hedderik van Rijn.

The preferred start date is November 1, 2017, but this can be postponed to February 1, 2018.

Qualifications

Successful candidates will have completed a Master's degree (or equivalent) in Cognitive Neuroscience, Artificial Intelligence, or another field of science relevant for the position. The ideal candidate has experience with M/EEG or fMRI and cognitive modeling, and has strong programming skills.

In addition, the candidate is expected to have good command of English (oral and written), is enthusiastic and has the ability to work in an interdisciplinary team, has a passion for science, is highly motivated, possesses excellent communication skills and an affinity for writing scientific papers and delivering presentations.

Conditions

The PhD student will be enrolled in the PhD Scholarship Programme and receive a scholarship of € 2027 per month (gross) from the University of Groningen for a period of four years. Information about the terms and conditions of the PhD Scholarship Programme can be found at: https://www.rug.nl/education/phd-programmes/phd-scholarship-programme/.

The scholarship PhD student will participate in the Graduate School of Science training programme for PhD students and will draw up a personal training and supervision plan together with his or her supervisor. The Graduate School also provides a progress monitoring scheme to ensure an efficient PhD trajectory resulting in a PhD thesis within four years. A Career Perspectives curriculum is part of the training, which aims to prepare students for their (academic or non-academic) careers after the PhD trajectory.

Being part of a cutting-edge research programme, the PhD student will receive excellent training in the form of hands-on instruction, advanced courses and summer/winterschools, complemented by workshops on generic research and transferable skills as well as teaching training. As a PhD candidate, you are committed to conduct independent and original scientific research, to report on this research in international publications and conference presentations, and to describe the results of the research in a PhD dissertation, to be completed within four years.

Host organization

The University of Groningen has an international reputation as a dynamic and innovative institution of higher education, offering high-quality teaching and research. Balanced study and career paths in a wide variety of disciplines encourage the 30,000 students and 5,500 employees to develop their own individual talents. The University of Groningen is proud to be among the global elite with a classification in the top 100 of the Shanghai ARWU, the THE World University Rankings, the U.S. News 'Best Global Universities Ranking', and the NTU Ranking. It marks the 24th place in the global ranking of Best Places to Work in Academia, scoring 3rd best in Europe and 5th non-US university. Joining forces with prestigious partner universities and networks, the University of Groningen is truly an international place of knowledge.

The institute of Artificial Intelligence hosts a number of topics in artificial intelligence and cognitive science: logic, cognition, machine learning and robotics. Central topics of interest are computational neuroscience and biologically inspired artificial intelligence. The PhD student will work within the Cognitive Modeling research group, which is one of leaders in Europe of research in symbolic cognitive models. The goal of the Cognitive Modeling group is to develop formal models of cognition and methods to test their capacity to predict human behavior and neuroscience data. As such, they bridge the gap between brain processing on the one hand and intelligent human behavior on the other hand. Although models are primarily developed for theoretical goals, they also serve practical purposes in human-computer interaction, educational technology and agent development.

How to apply

Please upload your application before August 30, 2017, 23:59 Dutch local time at http://www.rug.nl/education/phd-programmes/phd-scholarship-programme/phd-scholarships?details=00347-02S0005SGP.

The application should contain (note that you do *not* have to submit a research proposal at this stage):

1. a cover letter introducing yourself, describing your motivation and qualifications to conduct scientific research in model-based neuroscience, and your choice for the particular project;
2. a full CV demonstrating academic excellence, including publications and presentations (if applicable);
3. a copy or scan of your MSc diploma (or equivalent; provide a certified University letter stating when your graduation will be if between the application deadline and start of the project);
4. proof of sufficient competence in English, see http://www.rug.nl/research/gradschool-science-and-engineering/phd-programme/admission/english?lang=en;
5. names and contact details of two academic references.

Timeline

Deadline for application: August 30, 2017
Notification email of selection: September 15, 2017
Interviews: October 2-6.
Announcement of selected/rejected candidates: October 11, 2017.

For questions regarding this position, please email Jelmer Borst (j.p.borst@rug.nl).