

Post-doctoral position in psychometrics

Department of Education, University of Liège (Belgium)

December 18th, 2016

Description of the position

The Department of Education, University of Liège, Belgium (www.ulg.ac.be), is seeking for a **full-time two-year postdoctoral researcher**, starting from **January 1st, 2017** until **December 31st, 2018**. Shorter duration is possible, and starting time can be delayed by six months at most. This position is funded by the Research Grant number F.4505.17 of the National Fund for Scientific Research (FNRS, Belgium; <http://www1.frs-fnrs.be/>), recently awarded to and under the supervision of Dr. David Magis (Research Associate FNRS, University of Liège).

Project overview

The main core of this project is to develop suitable exact formulas to compute the standard error (SE) of ability estimates in item response theory (IRT). Indeed, most ability estimators have known SE that arise from asymptotic considerations. However, in case of short tests or at early stage of computerized adaptive testing (CAT), these asymptotic formulas might be over- or under-estimating the true values and this could considerably affect both the test procedure (in CAT) and the

The purpose of this project is threefold: (a) to evaluate the impact of misusing asymptotic SE formulas with short (linear or adaptive) tests; (b) to develop accurate, short-test variants that outperform asymptotic formulas, both in linear and adaptive designs; (c) to disseminate the results with efficient implementation in open-source software and by communicating to communities of psychometricians and applied researchers.

Candidate tasks

The successful candidate will be in charge of the following tasks:

- The development of ad-hoc statistical methods for computing exact standard errors of IRT ability estimators;
- The evaluation of accuracy and efficiency of these formulas in the context of linear and adaptive testing, by means of simulated data;
- The practical usefulness of these formulas when analyzing real data;
- The writing of papers summarizing the research output and the submission to appropriate top-level international journals;

- The dissemination of results by means of oral communications in various conferences and meetings.

Profile

The successful candidate will

- hold a PhD degree in psychometrics, educational measurement, statistics or any related field (IMPORTANT: the candidate must hold his/her PhD diploma for at most five years at the starting time of this position);
- have a strong experience in psychometric research, assessed by significant publications in international high-level journals in psychometric and/or educational measurement;
- have shown interest / made significant research in IRT and / or CAT;
- have strong written and oral communication skills in English;
- have a good knowledge of the R software.

Project specificities

The research grant covers

- full salary of the candidate for a maximal period of two years,
- research expenses for transportation, conference registration and lodging,

Further information is available upon request.

Work environment

The main work environment will be the Department of Education of the University of Liège, Belgium (www.ulg.ac.be). It is located on the main campus of the University, on the Sart-Tilman hill, located south-east to the downtown of Liège (http://www.ulg.ac.be/cms/a_16385/fr/sart-tilman). It is easily accessible by public transportation (two bus lines with regular connections from/to downtown) and by car.

Liège is the largest French speaking city of the Eastern side of Belgium. It is located at short distance to the Netherlands (about 30 kms from Maastricht) and Germany (about 50 km to Aachen). It is connected to neighbor countries and regional and international airport by trains and highways.

Both the city and the university are mostly French speaking areas. However, the work environment for this project will be in English. There is no planned teaching duty for this position.

Contact information

Any further information related to this position and/or the project can be obtained by contacting

David Magis

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Applications must be sent by email only to david.magis@ulg.ac.be and must contain

- a motivation letter
- a detailed scientific CV
- an electronic copy of the applicant's major publications

The position will remain open until filled.