



Postdoctoral Research Position in Semiparametric and Nonparametric Statistics

Description:

A postdoctoral research position in semiparametric and nonparametric statistics is available at Ghent University (Belgium).

The work will be in close collaboration with Olivier Thas and Stijn Vansteelandt. It fits in a project funded by the Research Foundation Flanders (FWO). This position involves developing and applying statistical methods related to the probabilistic index model (PIM). PIMs were recently proposed by the promotor of this project and published as a read paper in JRSSB (2012, vol. 74(4), p. 623-671). A project summary is included at the end of this announcement.

We seek an individual with a strong background in theoretical and computational statistics. Thorough knowledge of semiparametric and/or nonparametric statistics is advised. The research position is available with an initial appointment of one year (with a two year extension if positively evaluated) and a negotiable start date in 2014.

Qualifications:

PhD in statistics or a related field, preferably graduated after 2011. Experience in semiparametric/nonparametric statistical inference is preferred. Good programming skills in R.

Additional Information:

Informal questions can be sent to olivier.thas@ugent.be or stijn.vansteelandt@ugent.be.

Applicants should submit a cover letter (including a brief but detailed statement of interest) and cv to Olivier.Thas@UGent.be. Applications will be received prior to June 30, 2014, until the position is filled.

Project summary:

Regression models have widescale application in empirical research for assessing the association between a response and covariates. Traditional regression models focus on the average response. They are therefore less well suited to the analysis of skewly distributed or outlying responses. Probabilistic index models (PIM) form a new class of models for the probability that a change in covariate pattern is associated with an increase in the response. They are models for the probabilistic index, which expresses how likely it is for the first of two randomly picked subjects with given covariate patterns, to have a higher response than the second subject. This

class of semiparametric statistical models is useful when not only the mean of the response is affected by the covariates. Moreover, inference for these models is robust to outliers and has a natural link with the theory on classical rank tests. For instance, score tests under a PIM generalize the Mann-Whitney test by enabling covariate adjustment and by providing interpretable effect size parameters.

The goal of this project is:

1. to develop a solid asymptotic distribution, efficiency and small sample theory for the PIM parameter estimators;
2. to work out important extensions, such as confounding and censoring adjustment;
3. to demonstrate fundamental connections with theories of rank tests and rank estimators.