



HR EXCELLENCE IN RESEARCH

Post doc subject: robust (statistical) ranking models

Post doc Advisors:

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Context of the study:

Preference learning is now a mature and active field within machine learning, that faces a number of challenges such as learning models from partial or noisy preferences, delivering robust recommendations to the end-user, or collecting relevant and informative additional preferences from the user.

Imprecise probabilistic approaches (understood in a large sense, i.e., including belief functions, possibility theory, robust Bayes approaches, etc.) are well-adapted theories to treat such issues, as they are devoted to the problems of identifying situations where information is missing and of learning robust models in case of imperfect information.

However, there is still little works focusing on how and when to combine the two approaches. The goal of this post-doctoral position is to somehow fill this hole by investigating the area in different directions.

Post doc description:

The post-doctoral candidate will be set in the Heudiasyc laboratory, and will be part of on-going projects (PreServe National project, Thesis grant from the Sorbonne AI project SCAI) . The chosen candidate will have the opportunity to work with PhD students and supervise graduate students. Among the possible envisioned research topics are:

- Extending classical ranking probabilistic models to the imprecise setting, such as Plackett-Luce or Mallow's models, but also random utility models or choice functions (these models gaining momentum both within machine learning and imprecise probabilities).
- Investigating how imprecise approaches can be helpful to elicit preferences from end-user, i.e., perform active learning on preference structures.
- Exploring the problem of performing robust, skeptic inferences on the combinatorial structure represented by the set of possible ordering over alternatives, equivalent to the set of permutations.

More generally, the successful applicant will integrate the group working on imprecise and evidential methods within the Heudiasyc laboratory.

Candidate's profile:

The candidate will ideally have a strong background in either preference learning or severe uncertainty handling, with an interest in imprecise probabilistic and robust approaches. More generally, we expect



the candidate to display strong skills in at least some related areas of computer sciences (machine learning, optimization, uncertainty modelling), for instance through the means of strong scientific papers put forward by the candidate.

Documents required to apply:

Send to sebastien.destercke@utc.fr and david.savourey@utc.fr

- Curriculum vitae
- Motivation letter
- At least two references and/or recommendation letters
- A statement of research experience and interests

Any question about the position can be asked to the same addresses.

Location:

Laboratory Heudiasyc UMR CNRS-UTC 7253
Université de Technologie de Compiègne (UTC)