Research and researcher evaluation in Informatics*

by the ad hoc group of LIP †chaired by Pierre Lescanne

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Preamble

All studies that exist on research and researcher evaluation in informatics have shown that, like in any domain that includes both science and technology, informatics has specificities. One can notice the following.

Researchers create artefacts. Whereas other domains either create concepts or discover phenomena, the aim of science with technological character is to create artefacts, which are called in the domain of informatics : hardware, software or firmware.

Researchers in informatics publish in conferences. The very fast life cycle of new ideas in the domain of informatics lead the researcher to publish in conferences which allows quick refereeing and publication. Best conferences are as selective, and even more, than best journals.

Informatics in journals has a long publication cycle. When a researcher, especially a researcher in theoretical informatics, publishes in a journal, he falls in the cycle of mathematics where the publication time is counted in a couple of years or half-years (form one year to three years (see `http://citeseer.ist.psu.edu/pubdelay.html`).

The success on a good idea in informatics is counted in number of happy users. This means that one should evaluate this satisfaction index for which tools are lacking.

*This is a quick translation by Pierre Lescanne of an internal document.

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Reference documents

We present here documents that analyzes researcher evaluation.

Public research evaluation in French public institutions [ddlR03] With the last one it is the only French reference among those we propose. For that reason, this analysis is important when talking about evaluation of French research in informatics. Reading its 3rd chapter entitled *evaluation criteria and indices* is especially recommended.

Best Practices Memo Evaluating Computer Scientists and Engineers For Promotion and Tenure [PSU04] has been written by top researchers in informatics with the support *Computer Research Association* (the alliance of US university computer science departments and company research departments). The document details the specificity of academic researchers in informatics when promotions and careers are in question. The authors demonstrate the importance of personal evaluation.

Academic Careers for Experimental Computer Scientists and Engineers [Cou94] : a thick document from 1994 made and approved by US research national council

The health of research conferences and the dearth of big idea papers [Pat04] is the editorial of the *Communications of the ACM* of December 2004 which analyzes the importance of conferences and the difficulty to promote innovative idea there. This statement will make the task of evaluators even less easy when evaluating innovative departments and/or researchers

Predictive ranking of computer scientists using CiteSeer data [FY04] analyzes the bias in measurements in CiteSeer. Why Corbato or Engelbart, who had a considerable influence on today informatics, hence on you and us, do not appear on CiteSeer list of the most cited 10 000 researchers ? You will know reading the paper.

Poll on use and need of documentation tools of sections of the French National Research Committee. This document is the analysis of a poll made by the general secretary services of CNRS. It can be found on the Internet using Google. It gives a pictures of the tools used by of the French National Research Committee when evaluating researchers. As it is only an instantaneous picture, this document does not suggest anything . It does not allows the reader to get an opinion on the current evaluation process. Its interest is restricted.

Bibliometric tools

We insist on the fact that bibliometric tools have their limit, especially in informatics, but it seems important to quote anyway tools which seem to have a relative credibility.

CiteSeer is a digital library and research tool, which focuses on informatics and information science. CiteSeer has been developed at NEC Research Institute by Steve Lawrence, Lee Giles and Kurt Bollacker. It is today hosted at the University of Pennsylvania and has mirrors at MIT and Zurich University. In addition to its documentation tools, CiteSeer offers meta-data and bibliometric measurement tools, but those tools are biased due to the method used to collect data. In particular, CiteSeer gives more importance to documents present on the Internet, concerning those citing as well as those cited. According to the caution that has to be taken w.r.t bibliometric data and w.r.t. CiteSeer, CiteSeer is nevertheless an interesting tool, when bibliometric aspects of research in informatics are in question.

Google Scholar appeared at the end of 2004. It takes advantage of the technology and knowhow of Google, the reference browser of the Internet. Due to agreements made by Google with libraries an publishers, it operates on a document basis that goes beyond digitalized and Web available documents. By lack of distance, its use as a bibliometric measurement engine is even less clear than CiteSeer.

Recommendations

Here are recommendations made to ENS de Lyon by the ad hoc LIP group for research and researcher evaluation in Informatics.

Impact analysis of the three best publications This analysis is asked to the researcher. He/she selects by him/her-self he/her three most significative publications on a period of interest. He/she writes a note from ten lines to one page by paper, which gives the evaluator all the indices that allows him appreciating the impact and all the arguments that allows him appreciating its value.

Marks of scientific recognition, that are medals, prize, participation to program and/or evaluation committee, invited conferences.

The future of doctors. If young researchers of our laboratory have found position in recognized institutions this means that research they have done is recognized.

Mobility. A mobile researcher has more chance to be appreciated. As mobility we mean week long invitations in respected institutions, as well as department to department moves.

Software uploading. More than nothing, this is a measurement of the happiness of the users of our artefacts .

Références

[Cou94] National Research Council. *Academic Careers for Experimental Computer Scientists and Engineers*. National Academy Press, Washington, D.C., 1994. disponible sur `http://books.nap.edu/html/acesc/`.

[ddlR03] Comité National d'évaluation de la Recherche. *Evaluation de la recherche publique dans les établissements publics français*. Documentation française, 203. disponible sur `http://www.cner.gouv.fr/fr/pdf/bib.pdf`.

[FY04] Dror G Feitelson and Uri Yovel. Predictive ranking of computer scientists using citeseer data. *Journal of documentation*, 60(1) :44–61, 2004. disponible sous `http://www.cs.huji.ac.il/~feit/papers/CitePred04JDoc.pdf`.

[Pat04] David A. Patterson. The health of research conferences and the dearth of big idea papers. *Commun. ACM*, 47(12) :23–24, 2004.

[PSU04] David Patterson, Lawrence Snyder, and Jeffrey Ullman. *Best Practices Memo Evaluating Computer Scientists and Engineers For Promotion and Tenure*, 2004. disponible sur `http://www.cra.org/reports/tenure_review.pdf`.