

Intelligent Systems for CV Evaluation in Accreditation Processes

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The Spanish academic/scientific community is continuously being evaluated by different national agencies. They are evaluated by their teaching and research activity, in some cases by the evaluation systems for contracted or university professors (ANECA), and in others by the impact of their research in the scientific field, in a period of six years, as it is in the evaluation of research sections by the CNEAI-ANECA. These are increasingly entrenched and unavoidable processes for anyone who wants to develop this type of activity.

Such evaluations are complex and time-consuming activities that require a large amount of effort for humans. This situation generates the necessity of automatic mechanisms for decision making and evaluation of these activities, as much for the applicants as for the evaluating agencies.

The experience of many years working in this field has shown us the need to create really efficient Intelligent Systems that speed up these processes, from the two possible perspectives that are posed:

- On the one hand, that of the teacher / researcher who needs to know the status of his CV before an evaluation that possibly marks his professional career. For these users, it is very interesting to be able to self-assess their CV and know their "weaknesses", so that they can correct it as soon as possible, and thus be able to determine if it is more reasonable to postpone an application in order to avoid a penalty period.
- On the other hand, by the evaluation agencies that see their work slow down because of an important accumulation of tasks. Such tools can help them by providing a pre-evaluated report to be passed on to the commissions, in order to issue a final decision.

If we focus on the main section in the evaluation of research, the evaluation of scientific production, and in particular, journals, this section being the most valued, we must consider that depending on the areas of knowledge, the strategies to locate quality indicators, and impact indexes, have more or less difficulty. For instance, the quality indications of the journals of the humanities and social sciences areas are the most complicated to obtain, since it is necessary to use a large number of different tools to be able to have complete quality indications and be faithful to the impact of the journal that we want to justify. The necessary information is highly distributed, which forces us to perform many different searches, and therefore consumes a lot of time.

An initial approach to deal with this problem was developed as the Final Degree Project of the student D. Alfonso Ruíz-Bravo Jiménez, in the Degree in Computer Engineering from the University of Granada, entitled "Information System for the generation of quality reports of scientific publications". The work was approved and defended in December 2015, under the direction of Daniel Sánchez, following the proposal of M. Carmen Moreno Vázquez (Investiga Gestores S.L.), authors of this contribution.

The objective of this work was to simplify the creation of quality evidence reports for scientific journals, making a study of all possible tools that can provide us with the necessary information in a single search. The tool developed provides a complete report with the necessary data to justify the impact of our scientific publications, integrating information from different sources.

Once the viability of this work has been verified, we intend to go further, integrating the following steps in the evaluation process. The objective is to create an Intelligent System that generates decision maps in one case and, on the other hand, evaluation, with the application of fuzzy technologies.

This Intelligent System would allow classifications by area of knowledge, keywords, journal assessment and comparison according to the need of the query, decision making to see where to publish, where automatic dating dumps with bibliographic managers would be added from different sources (google scholar, scopus, clarivate). This approach would be extended to books, applying editorial evaluations, and consulting tools that inform us about the dissemination of these publications in specialized sources worldwide.

Such queries would be parameterized according to the criteria that are valid at that moment, for the type of evaluation considered. This is necessary because both the evaluation criteria and the data to be obtained are "alive", they are changing continuously, and hence the system has to change with them. Particularly, the system must be able to modify the parameterization / models, according to the call: in the case of the CNEAI, every year; in the case of ANECA-Academia, every two years.

The use of fuzzy technologies would allow the simultaneous modeling of deductive and decision making processes. Do not forget that these evaluation processes are increasingly more restrictive. For instance, it is required that the contributions are published in media related to the corresponding area of knowledge, for which also the content of the contribution has to be evaluated

The proposed system would contribute to speeding up the evaluation process. The documents that have to be provided in order to prove the merits of the candidate can be managed by the system. Ideally, when uploading this documentation, an intelligent manager can determine the area of knowledge and classify the content using fuzzy technology, for its later automatic evaluation in terms of the current criteria.

Through the development of this intelligent system, the researchers would save a lot of time in bureaucracy, since the introduction of data, its processing and the generation of reports would be automatic or, at least, semi-automatic with a reduced human participation.