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On evaluating the quality of a computer science/computer engineering conference

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ABSTRACT

The Peer Reputation (PR) metric was recently proposed in the literature, in order to judge a researcher's contribution through the quality of the venue in which the researcher's work is published. PR, proposed by Nelakuditi et al., ties the selectivity of a publication venue with the reputation of the first author's institution. By computing PR for a percentage of the papers accepted in a conference or journal, a more solid indicator of a venue's selectivity than the paper Acceptance Ratio (AR) can be derived. In recent work we explained the reasons for which we agree that PR offers substantial information that is missing from AR, however we also pointed out several limitations of the metric. These limitations make PR inadequate, if used only on its own, to give a solid evaluation of a researcher's contribution. In this work, we present our own approach for judging the quality of a Computer Science/Computer Engineering conference venue, and thus, implicitly, the potential quality of a paper accepted in that conference. Driven by our previous findings on the adequacy of PR, as well as our belief that an institution does not necessarily "make" a researcher, we propose a Conference Classification Approach (CCA) that takes into account a number of metrics and factors, in addition to PR. These are the paper's impact and the authors' h-indexes. We present and discuss our results, based on data gathered from close to 3000 papers from 12 top-tier Computer Science/Computer Engineering conferences belonging to different research fields. In order to evaluate CCA, we compare our conference rankings against multiple publicly available rankings based on evaluations from the Computer Science/Computer Engineering community, and we show that our approach achieves a very comparable classification.

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1. Introduction

The problem of assessing the quality of a publication venue has attracted significant attention in the literature. Especially for the case of scientific journals, a large number of bibliometric indicators is available, as noted by [Setti \(2013\)](#). The same is not true for conferences, however, hence this work focuses on the assessment of conference quality, and in particular on Computer Science/Computer Engineering conferences.

Existing work on assessing conference quality tends to use either too abstract criteria or to need the collection of data that is extremely difficult to gather, especially for large conferences. Section 7 of this paper discusses the related work.

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A new metric, implicitly evaluating a researcher's contribution through the quality of the conference venue where it is presented, was proposed by [Nelakuditi, Gray, and Choudhury \(2011\)](#). The authors argued for the validity of their metric, named Peer Reputation (PR), by claiming that the selectivity of a publication venue is a function of the reputations of the authors' affiliating institutions. For simplicity, they represented each paper by the affiliation of its first author. Hence, according to PR, a quick assessment of the quality of a conference can be made by using university rankings and checking the respective ranking of the affiliation of the first author of each paper. It is explained, by Nelakuditi et al., that although PR is not a perfect metric to assess the quality of a publication, it provides a coarse-grain measure of the selectivity of a conference or a journal, and can potentially be more helpful than the Acceptance Ratio (AR) of a conference (defined as the number of accepted papers divided with the number of submitted papers).

Despite its interesting basic idea, in our view PR is not adequate by itself in evaluating a researcher's contribution. The reason is that it is too narrow in scope, as it only focuses on a researcher's affiliation, as if this affiliation completely defines the researcher. This choice may serve the logic of a "snap judgement" which the authors wanted to propose ([Nelakuditi et al., 2011](#)), but as we discussed ([Loizides & Koutsakis, 2013](#)), a finer-grain approach needs to be used in order to make a thorough assessment of the quality of a conference.

Even so, we need to state that, in our view, the fact that a paper is accepted in a conference, as good as that conference might be, does not *define* the quality of the paper itself. Similar points have been made in the literature regarding journal publications ([Nature, 2005](#); [Nature Materials, 2013 editorials](#)). Still, a publication in a high-quality conference can serve as an *indication* of the paper's quality and potential impact. Therefore, defining the quality of a conference is of significant interest.

In this work, we propose the Conference Classification Approach (CCA), which is a finer-grain method for evaluating the quality of Computer Science/Computer Engineering conferences as it is indicated by a number of metrics which are easy to compute. Similarly to the case of the scientific impact of journals, which is known to be unrealistic to be captured by any single indicator ([Setti, 2013](#)) we argue that the use of more than one metric is necessary to judge the quality of a conference. These multiple metrics are incorporated into CCA, in order to lead to a unique classification for each conference venue.

2. Limitations of the peer reputation metric

In order to quantify their idea of using the authors' affiliating institutions to judge the quality of a conference venue, Nelakuditi et al. represented each paper by the affiliation of its first author, which is mapped to a rank. Their proposed Peer Reputation (PR) metric, which is proposed for making "snap judgements" on a publication quality through the quality of the venue where the work was presented/published, conveys the selectivity of a conference with a tuple, say $\langle 1/3, 20 \rangle$, indicating that 1/3 of the papers at that conference are from the top 20 universities. PR was evaluated over 18 venues, 16 of which were conferences and 2 were journals. Our work in this paper focuses only on conferences, and in particular on Computer Science/Computer Engineering conferences, due to the abundance of bibliometric indicators for journals.

In our work ([Loizides & Koutsakis, 2013](#)) we discussed PR extensively and highlighted its merits but we also explained that, despite the improvement it offers over AR, PR also has some important limitations as a metric. These limitations can be summarized as follows:

1. The evaluation of PR was based only on networking conferences, and was made only over two years (2008, 2009). This was not only limiting in itself, but also because the universities' rankings used by Nelakuditi et al. were based on the evaluation of *Computer Science* graduate schools, hence the rankings actually reflected the quality of a graduate program on a much larger set of disciplines than the single discipline (networking) that PR's evaluation focused on. Hence, these rankings may not even be fully representative in terms of the networking field (e.g., excellence in another field of Computer Science may give one university the edge in rankings over other universities which may have stronger networking graduate programs). In our own work ([Loizides & Koutsakis, 2013](#)) we derived PR results for a large number of conferences from three fields of Computer Science/Computer Engineering (Informatics, Electronics, Networking) to get a more representative set of results. The conferences were organized between 2006 and 2011.
2. PR disregards the importance of the location of a conference. Depending on the continent where a conference takes place, submissions from far-away countries might be discouraged as travel could be too time- and energy-consuming, or too expensive. In our earlier work ([Loizides & Koutsakis, 2013](#)) we studied the effect of location on PR results. Our study showed that location can often (but not always) play a significant role in conference selectivity, as defined by PR.
3. PR is based only on the ranking of the university that the first author is affiliated with. Given the fact that many papers stem from the collaboration of authors from different universities, or from different departments of the same university, which are differently ranked in their respective fields, the choice of using just the first author seems to be an oversimplification. In our earlier work ([Loizides & Koutsakis, 2013](#)) we used the mean ranking of the universities that all authors of each paper are affiliated with. This change led to significant changes in the PR values for many conferences, which were generally related to a decrease in the PR values. This indicated that the first authors were on average affiliated with lower-ranked universities than their co-authors.
4. A limitation that Nelakuditi et al. mentioned, but did not consider as important, was that they based PR solely on the ranking of US universities. They explained that in their view this is not a serious limitation for popular networking conferences as these venues receive a high fraction of papers from US universities. Our study, which included rankings

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