

Snap Judgement of Publication Quality: How to Convince a Dean that You are a Good Researcher

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*A comprehensive qualitative assessment of a researcher's contribution in a specific narrow discipline takes time and expertise. Given the shortage of both in typical situations, a researcher's productivity is often judged quantitatively by the number of publications, their acceptance ratios, and citation counts that are highly discipline-dependent. We believe such a cursory evaluation is unavoidable and suggest a more intuitive discipline-agnostic approach for perfunctory assessment. We propose a metric called **peers' reputation** (PR) which ties the selectivity of a publication venue with the reputations of authors' institutions. Briefly, PR conveys the selectivity of a conference with a tuple, say $\langle \frac{1}{3}, 20 \rangle$, indicating that $\frac{1}{3}$ of the papers at that conference are from the top 20 universities. We compute PR for networking research publication venues, and argue that PR is a better indicator of selectivity than acceptance ratio, and many conferences have similar or better PR than journals. While these insights are not necessarily new to researchers in the networking community, PR metric helps inform a dean or a provost that getting a paper accepted at MobiCom involves competing with researchers from the top 20 US universities.*

I. The Need for a New Metric

There are several venues — journals, conferences, symposiums, and workshops — for publishing research in the field of Computer Science and Engineering (CSE). The *selectivity* (the difficulty of getting the paper accepted) and the corresponding visibility (the recognition received for the accomplishment) critically depend on the publication venue. Researchers constantly grapple with the decision of identifying a suitable venue for disseminating their research. They also have to factor that something that is highly regarded within CSE may be undervalued by those outside CSE. Even within CSE, different research communities such as Networks and Databases may be unfamiliar with the selectivity of each others' publication venues. Therefore, it is desirable to have a metric to indicate the selectivity of a publication venue that makes sense across disciplines. This is especially informative for assessing the research productivity by others outside the domain while making decisions on whether to recruit, retain, or reward a researcher.

It is a common assumption, particularly among those outside CSE, that publications at workshops, symposiums, conferences, and journals respectively are an upward progression from preliminary to substantial research works, and therefore increasingly selective. But in practice, a symposium such as Networked Systems Design and Implementation (NSDI) accepts 16 page papers based on implementation re-

sults whereas conferences such as Wireless Communications and Networking Conference (WCNC) solicit 6 page papers. One could argue that a workshop, say Hot Topics in Networks (HotNets), may be more selective than even a journal, say Computer Communications. Some venues like High Performance Switching and Routing (HPSR) that were workshops previously are renamed as conferences recently, perhaps to improve their perceived quality. Therefore, it is preferable to deduce the selectivity of a publication disregarding the categorization of the venue.

Why not acceptance ratio? A metric currently used to convey the selectivity of a conference is *acceptance ratio* (AR) [2]. AR of a conference is the fraction of the submitted papers that are accepted for inclusion in the proceedings [3]. It is generally regarded that the lower the AR of a conference, the higher is its selectivity. But we believe AR is not a very good discriminator of selectivity. For example, Symposium on Operating Systems Principles (SOSP), a highly reputed biennial event, has ARs of 19.1% in 2007 and 16.4% in 2009, comparable to many not so prestigious conferences. This is because, some highly selective conferences do not receive many premature submissions since their authors do not think they have a good chance of acceptance. Due to such self-filtering by authors, many conferences with varying selectivity have similar ARs. Furthermore, AR information is not available for journals and may not be meaningful due to multiple revisions/resubmissions of articles.

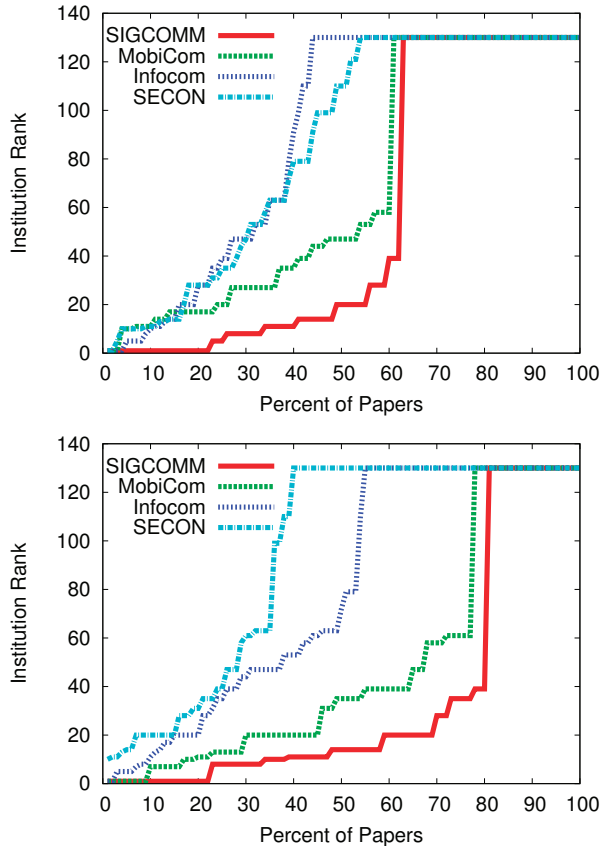


Figure 2: Distribution of first authors' affiliations' ranks for networking conferences in 2009 and 2008.

The distribution of the affiliations of authors of networking conferences for the years 2009 and 2008 are presented in Figure 2. It shows that SIGCOMM and MobiCom publish higher fraction of papers from top ranked universities than INFOCOM and SECON. Such a distribution about authors permits more fine-grain comparison of the publication venues. However, it is more convenient to indicate selectivity by a simple, albeit a coarse grain, *gist* of this distribution.

A simple measure of selectivity of a conference could be the fraction of accepted papers from the highly ranked universities, say top 20. Conversely, selectivity could also be indicated by the number of top ranked universities that contribute a given fraction, say a third, of all the papers in the conference. We propose a metric based on the latter approach, which we refer to as $\frac{1}{3}$ PR. Suppose a conference's $\frac{1}{3}$ PR = 25. It implies that a third of the published papers in the conference have first authors from the top 25 universities. Thus, PR intuitively conveys who the peers are, which in turn reflects the level of competition and hence the selectivity of that publication venue.

Table 1 lists $\frac{1}{4}$ PR and $\frac{1}{3}$ PR for some popular networking conferences and journals. The question is what fraction is a better representative of the selec-

Table 1: PR of networking publication venues

Name	2009		2008	
	$\frac{1}{4}$ PR	$\frac{1}{3}$ PR	$\frac{1}{4}$ PR	$\frac{1}{3}$ PR
HotNets	5	7	1	5
SOSP	5	8	n/a	n/a
SIGCOMM	5	8	8	8
NSDI	8	11	1	7
SIGMETRICS	8	11	11	14
IMC	14	20	10	11
MobiSys	13	20	7	14
SenSys	1	20	5	14
IPSN	14	20	8	17
MobiCom	20	27	13	20
HotMobile	27	27	10	11
CoNEXT	10	17	20	130
TOSN	31	47	20	39
MobiHoc	39	47	28	44
TON	28	47	35	47
ICNP	39	58	28	31
Infocom	39	53	35	47
SECON	35	53	39	63

tivity. We opine that a fraction less than $\frac{1}{4}$ is too small a sample to reflect the conference. On the other hand, fractions higher than $\frac{1}{2}$ do not seem to differentiate between highly selective conferences from the rest. This is due to the lack of ranking for research institutes and universities outside USA. Therefore, significant fraction of authors of all conferences are tagged unranked. To balance the need for a large enough sample and the absence of world-wide ranking, we suggest using $\frac{1}{3}$ PR. Obviously, there are many ways to summarize the peer reputation which needs further investigation.

II.A. PR of Conferences vs Journals

There is an on-going debate about the role and quality of a publication at a conference versus a journal in computer science and engineering. Therefore, it is pertinent to compare the PR of conferences and journals. Table 1 shows $\frac{1}{4}$ PR and $\frac{1}{3}$ PR for IEEE/ACM Transactions on Networking (TON) and ACM Transactions on Sensor Networks (TOSN). It is clear that PR of most of the conferences we considered are on par or better than these well known journals. It appears that networking researchers from top ranked universities prefer to publish their work in highly selective conferences instead of journals. Please note that we do not intend to wade into the debate on conferences vs journals and take a side on whether our community move either way. PR metric only reflects

the way things currently are and we do not make a recommendation on future direction. However, if we choose to continue along the current tradition, PR could be handy in conveying the selectivity of conferences and promote their significance to those outside our research community such as college deans.

II.B. PR vs AR of Conferences

We have argued earlier that the commonly quoted acceptance ratio (AR) metric is not the best indicator of selectivity of a conference. Figure 3 contrasts the AR and PR of networking conferences for years 2008 and 2009. First, it shows that there is no correlation between AR and PR. There are many conferences with similar AR but quite different PR. Second, and perhaps more important, observation is that there are some conferences with low PR but high AR. We believe a conference where a third of the papers are from top 20 universities is quite selective even if its AR is above 22% (which is higher than many other conferences). These two metrics essentially measure different things. PR reflects the peers that one is competing against and AR gives the extent of competition among those peers. *We recommend that instead of using AR alone, either use PR alone or in conjunction with AR for reflecting the selectivity of a conference.*

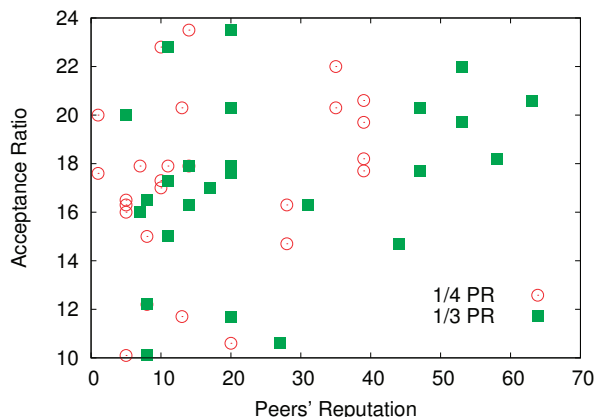


Figure 3: Contrasting acceptance ratio (AR) with PR of networking conferences in 2008 and 2009. Many conferences have similar AR but differing PR.

III. Caveats and Limitations of PR

There are several limitations to the PR metric. An obvious one that is already mentioned is that by basing PR on the ranking of US universities, some good conferences with significant participation from outside US universities and research institutes are likely to be underrated. This is not a serious limitation for popular networking conferences as they receive high

fraction of papers from USA universities. Another issue is that adoption of PR metric could lead to biased acceptance of papers from higher ranked universities by the conference organizers to make it appear more selective. But we believe such a bias, which may already exist, is not likely to be exacerbated by PR given that the acceptance decisions at good venues are made with discussion by the technical program committee. Finally, if the criteria for ranking of US universities were to consider the PR of their faculty publications that would amount to circular reasoning. We assume that US universities are ranked based on comprehensive criteria that goes deeper than PR type metrics.

We do not claim that, even without the above limitations, PR is a perfect metric to assess the quality of a publication venue, less so for an individual publication. It does however provide a coarse-grain measure of the selectivity of a conference or a journal. For instance, PR can inform a graduate student or a college dean that getting a paper accepted at MobiCom involves competing with researchers from top 20 US universities. Such a metric is easy to grasp even for those unfamiliar with the research scope of MobiCom. Thus, we believe PR at least serves as a measure of an aspect of quality that is simple to understand and appreciate across disciplines, even if it is not fit to be the sole barometer of the quality of a publication venue.

IV. Conclusions and Future Work

We proposed a peer reputation (PR) based metric to indicate the selectivity of a publication venue. PR is simple to grasp and yet a way to reflect research quality across conferences, journals, and disciplines. Of course, this paper is still an early exploration and certainly amenable to improvements in the future.

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