# Initiative for an H-index based Rating of Conferences and Journals in HCI and Related Fields

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## ABSTRACT
Research output metrics, in particular for peer-reviewed publications are of increasingly high importance for academics' careers. In Human-Computer Interaction (HCI) and related fields of research, like Computer Graphics and Multimedia, simple to use and objective measures like Thomson Reuter's impact factors aren't applicable. Ranking lists like the Australian ERA and CORE try to provide an alternative, but are often criticized for being subjective.

We are proposing an additional, alternative rating system which is entirely based on Hirsch indices by assigning four categories of quality (A*, A, B, C) to certain ranges (30+, 20-29, 10-19, 0-9) of H5 indices gathered from Google Scholar. We describe our methodology, results, limitations, and opportunities of this proposed "CHINZ" rating.

## Categories and Subject Descriptors
H.5.0 [**Information interfaces and presentation**]: General

## Keywords
ERA, CORE, Publish Or Perish, Hirsch Index, Impact Factor, ABDC, Google Scholar, Human-Computer Interaction, Multimedia, Graphics

## 1. INTRODUCTION
The question of how to determine the quality of scholars and their work is of high importance in today's research environment. Even more so, as the number of published research articles and possible publication venues, even within a single academic discipline, are often overwhelming. This makes it hard to assess the quality of published work (if one accepts such measures at all). Despite criticism from the research community of being focused too much on research output metrics we have to face the reality that research metrics do have a major impact on careers in academia. Research output metrics are used in promotion committees to assess a candidates' work and for funding applications to assess the quality of individual scholars and entire institutions (e.g. PBRF). Nowadays, there are even metrics for assessing the standing of individual scholars and single publication outlets. For the latter, the ERA (Excellence in Research for Australia) and the CORE (Computing Research and Education Association of Australasia) rankings are widely used in Australia and New Zealand for Computer Science and related disciplines. These ranking systems assign ranks (from A*, A, B, down to C) to publication venues such as conferences (ERA and CORE) and journals (ERA only). The assignment of these ranks is often criticized of being subjective as the criteria for the rankings are not fully transparent, but assumed to be based on impact factors, the reputation of organizers and editors, acceptance rates etc. in combination with a subjective weighting of all these parameters. However, given the importance of these rankings subjectivity should be avoided as much as possible. In particular in the highly interdisciplinary field of human-computer interaction, with a mixed set of conference and journal publications from computer and information sciences, information systems, psychology, design, computer graphics, or multimedia, it is very hard to rank publication venues in a fair and unbiased manner.

In this discussion paper we argue for complementing subjective rankings such as the CORE or the ERA rankings with more objective and transparent measurements such as the H5 index metric to rank conferences and journals in an alternative way. We will show how this metric allows for ranking of journals and conferences in a highly interdisciplinary field such as Human-Computer Interaction.

## 2. BACKGROUND
Besides the introduced rankings such as the CORE and ERA there are other ratings such as Arnetminer [1], the ABDC list [2], or the University of Erlangen's Ranking List in Information Technology [3]. All of them having the same issues with respect to subjectivity, bias, or applicability in a certain sub-discipline or context.

In addition to these ranking there are also metrics to assess the quality of papers. One of the most well-known is the impact factor. The impact factor measures the quality of a journal by computing the average of the number of citations of all papers that have appeared over the recent years (typically recent two years). So a journal having an impact factor of 3 translates into: On average every paper published in the year in question was cited 3 times in the previous 2 years. While this is often used to assess the quality of journals and papers appearing therein, impact factors have been also criticized in particular for averaging over all



CHINZ 2015, September 03 - 04, 2015, Hamilton, New Zealand



ACM 978-1-4503-3670-3/15/09…$15.00

published papers in that particular journal. Thus, only a few but very often-cited papers could have a strong effect.

Also, impact factor measurements normally only count citations from journals and are therefore unsuitable for our field, because a huge volume of work is published in conferences. For instance, high quality publications published at CHI or CSCW are not counted with impact factors.

A more recent metric used is the h5 index. The h5 index is based on the h (Hirsch) index commonly used to assess a researcher. According to Hirsch "a scientist has index h if h of his/her Np papers have at least h citations each, and the other (Np − h) papers have no more than h citations each" [4]. It could also be described as the largest number h such that h articles have at least h citations each. This means that if a researcher has an h index of 5 a maximum of 5 papers where at least cited 5 times.

The h5 is based on the idea of applying the h factor to journals and conferences. However, to overcome the problem of the age of certain venues (affecting the h index) the h5 index only considers the recent completed 5 years (thus h5) of papers published in a journal or conference. Consequently, the h5 can be described as the h-index of all papers published in a conference or journal over the last 5 complete years. It is the largest number h such that h articles published in the last 5 years have at least h citations each.

For developing a transparent and objective ranking of venues we argue that the h5 index is an appropriate measure even for an interdisciplinary field such as Human-Computer Interaction sitting at the intersection of different disciplines.

## 3. METHODOLOGY

To develop an h-index based ranking system for HCI and related fields we have to find a large enough set of possible publication outlets to which those h-indices can be assigned. We decided to use Arnetminer [1], because this database is also used internally by the CORE ranking (as one of a number of measures). Here, we produced a list of all items in the areas of HCI, Graphics, and Multimedia.

For each and every of those items we assigned the Google Scholar [5] h5-index, if we could find that item there. Because, Arnetminer entries might slightly differ from Google Scholar entries in their naming (including typos and abbreviations) we also tried synonymous and parts of the names to find the right entry. Our list can be made available upon request.

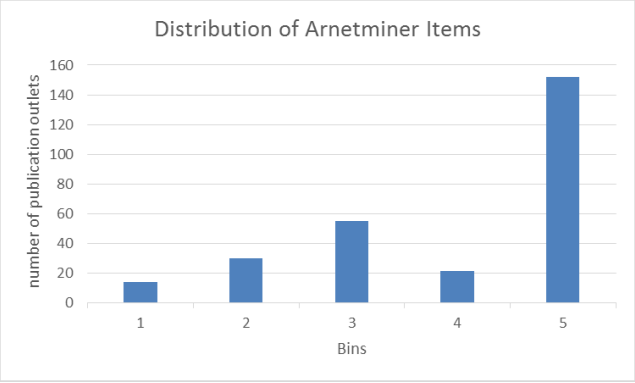


**Figure 1: Frequency distribution of publication outlets: 1- h5-index 30 and above, 2- 20-29, 3- 10-19, 4- below 10, 5 - no h5-index**

Google Scholar defines "h5-index is the h-index for articles published in the last 5 complete years. It is the largest number h such that h articles published in 2009-2013 have at least h citations each." [5]

We went through the produced list and, based on our expertise in the field estimated "natural" borders for bins of quality. Figure 1 shows the frequency distribution of items in those category bins.

In total, 272 items in HCI and related fields have been listed on Arnetminer. Of those 272, 14 (top 5.14%) in bin 1, 30 (top 16.17%) in bin 2, 55 (top 36.39%) in bin 3, and 21 (top 44.12%) in bin 4.

We think, that this quality bin distribution pretty well reflects on the standings of the publication outlets and would like to propose such a ranking as a more objective measure to be discussed at CHINZ.

## 4. DISCUSSION

We proposed a ranking of conferences and journals in the field of HCI and related fields based on the h5 index and bins to assign these venues into categories ranging from C, B, A, to A*. However, while we think that this ranking has many advantages we also agree that this approach is not free of limitations. Firstly, our approach inherently shares drawbacks with h5 indices - they cannot be used to assess the quality between different fields as the number of citations can largely vary. However, we argue that in HCI and the mentioned related fields the typical number of citations and consequently the h5 index is pretty similar which also is a consequence of the overlapping communities. Another limitation is the choice of 5 years for the h5 index and a different choice would in some cases lead to slightly different results (e.g. in some cases the venue would be sorted into a different bin). We argue that this is a rare case and the venue would only be in the neighboring bin. This leads also to the limitation that some venues would just sit between two bins and a slight variation in the h5 index could make a difference. The advantage is that these cases would be easy to spot. Despite these limitations we argue that this ranking is a more transparent way of assessing the quality of publication venues and consequently of papers accepted for those venues. We additionally think that the beauty of this ranking lies in its simplicity as it is easy to verify and relatively hard to cheat. To manipulate such a ranking one needs to affect the number of citations for a large set of papers or to manipulate the number of venues. Both is very unlikely to happen.

This "CHINZ ranking" might also be applicable to fields beyond HCI and related and is also applicable outside of the Australian and New Zealand context.

We would like to discuss this proposal and the detailed ranking in depth at this year's CHINZ conference, in particular how well our ranking proposal correlates with other measures. Given support from the discussions with the community at CHINZ we would like to proceed with contacting the maintainer of CORE or similar ranking to revisit their ranking based on our input.

## 5. ACKNOWLEDGMENTS

We would like to thank all of our colleagues at Otago University and at other universities in New Zealand and Australia as well as help from some international academics for the fruitful discussions we had. We also thank the organisers of the CORE ranking list for the constructive email conversations on rankings in general, and CORE and some selected publication venues in particular.

## 6. REFERENCES


[1] Arnetminer www.aminer.org

[2] ABDC List. http://www.abdc.edu.au/pages/abdc-journal-quality-list-2013.html

[3] Uni Erlangen Ranking List Information Technology. http://www.wi2.uni-erlangen.de/_fileuploads/research/generic/ranking/index.html ; last accessed 25/05/2015

[4] J. E. Hirsch, An index to quantify an individual's scientific research output, PNAS 2005 102 (46) 16569-16572; published ahead of print November 7, 2005, doi:10.1073/pnas.0507655102

[5] Google Scholar Metrics: https://scholar.google.co.nz/citations?view_op=top_venues&hl=en&vq=eng; last assessed 12/06/2015