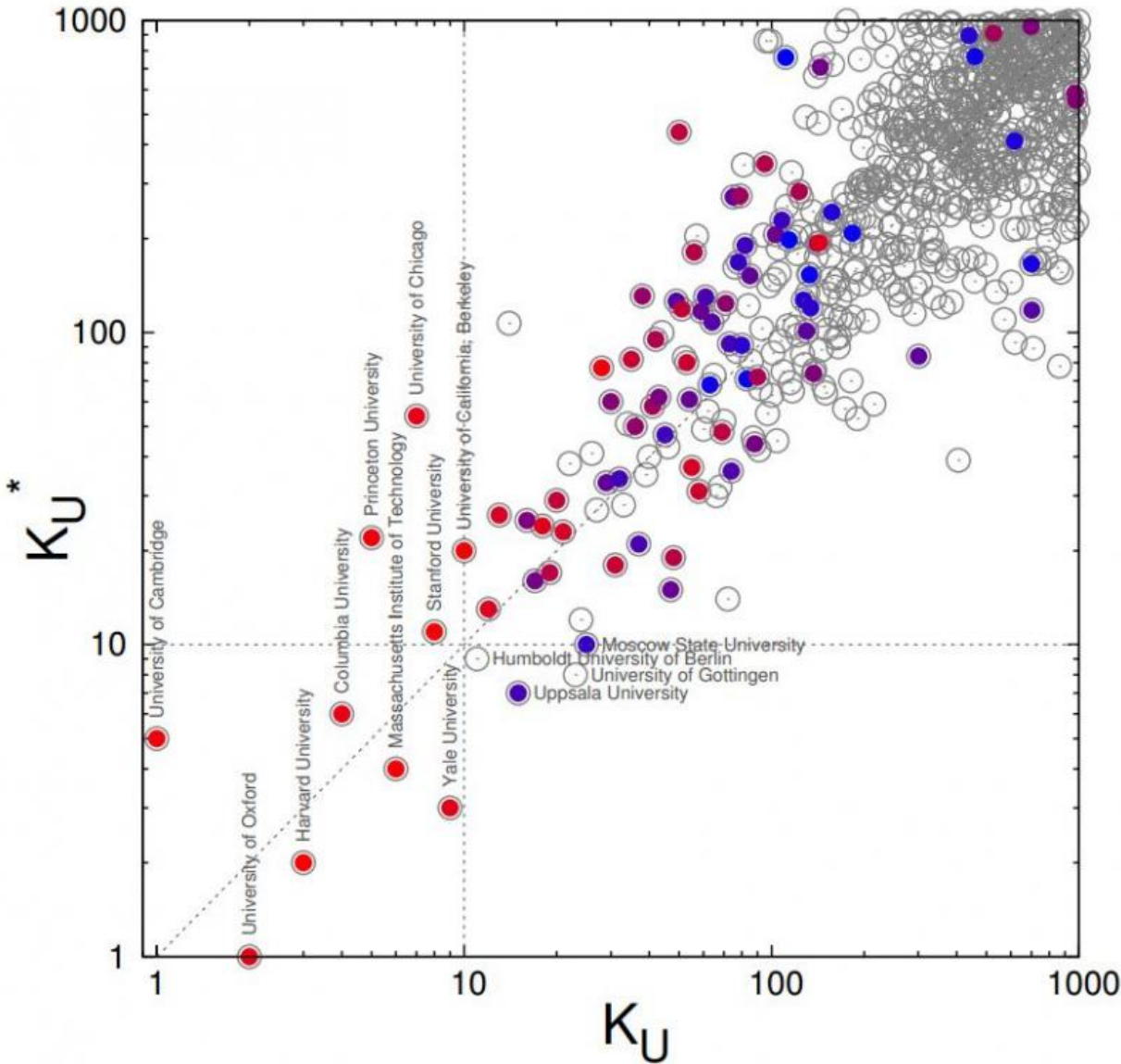


Wikipedia university rankings standing on mathematical grounds

December 8 2015, by Nancy Owano



Distribution of world universities on the PageRank - CheiRank plane (KU , K* U

) (open circles), where KU , K^*U are ranks of a given University U in WPRWU, WCRWU. Universities appearing in top 100 ARWU Shanghai ranking are shown by colored full circles with the color ranging from red (ARWU rank 1) to blue (ARWU rank 100). The names of certain universities are given. Credit: arXiv:1511.09021 [cs.SI]

Whether from well known or little known sources, lists attempting to rank the top schools in the world draw many eyeballs. Parents are eager to see which schools are prestigious and to be sought after for their children's futures; adolescents planning later schooling want to know the prestige names; generally people voice opinions and recall their experiences against names on lists.

While eyes are easily drawn to ranking lists, the important question remains after looking them up and down: what is the list worth? Who did the ranking and how did they assess the top schools—with what kinds of evaluation methods?

Answers are important. *MIT Technology Review* [said](#) that while universities generally play down the significance of these kinds of rankings, the lists can have a significant influence over funding.

Here is an approach to watch in university rankings: It's a Wikipedia Ranking of World Universities (WRWU). Three researchers in France have a paper on arXiv (with the same title, "Wikipedia Ranking of World Universities." The paper examines The Wikipedia ranking of top 100 universities.

There is a network data set of Wikipedia language editions. "On the basis of the developed analysis," they wrote, "we determine the most influential universities in the world and consider their time and

geographical evolution on a scale of 10 centuries of human history." They used PageRank, 2DRank and CheiRank algorithms "developed for directed networks where they proved their efficiency."

Cultural bias? It is, after all, said *MIT Technology Review*, "hard to produce an objective ranking of almost anything, let alone universities. Cultural, historical, and geographical factors can all influence these rankings in ways that are hard to quantify."

The authors nonetheless said their analysis gives "no cultural preferences standing on pure mathematical grounds."

They said that "We think that the Wikipedia ranking provides the firm mathematical statistical evaluation of world universities which can be viewed as a new independent ranking being complementary to already existing approaches. In the view of importance of university ranking for higher education we hope that the WRWU method will also find a broad usage together with other rankings."

Some interesting features about their research are (1) the PageRank list of WPRWU top 100 universities had 62 percent overlap with ARWU Shanghai list. ARWU stands for Academic Ranking of World Universities and the 2015 list was released by the Center for World-Class Universities at Shanghai Jiao Tong University. According to a Wikipedia entry, ARWU is regarded as one of the three most influential and widely observed university measures; (2) the WPRWU gave more emphasis to non Anglo-Saxon cultures reducing the percent of US universities from 52 in ARWU to 38 in WPRWU; (3) The number of top PageRank universities per inhabitant demonstrated the efficiency of universities in countries of Northern Europe and Switzerland; (4) for the PageRank list of top 100 universities in 24 editions they found the dominance of Germany and Italy before 19th century, even if the rise of US universities was already visible. The dominance of the US was

established after the 19th century

MIT Technology Review, in assessing the value of their contribution, said that "They've used the way universities are mentioned on Wikipedia to produce a world ranking. Their results provide a new way to think about rankings that may help to avoid some of the biases that can occur in other ranking systems." The review of the paper also said that the Wikipedia [ranking](#) "provides a new way to analyze the current state of affairs and should add to the debate in a useful way."

More information: Wikipedia Ranking of World Universities, arXiv:1511.09021 [cs.SI] arxiv.org/abs/1511.09021

Abstract

We use the directed networks between articles of 24 Wikipedia language editions for producing the Wikipedia Ranking of World Universities (WRWU) using PageRank, 2DRank and CheiRank algorithms. This approach allows to incorporate various cultural views on world universities using the mathematical statistical analysis independent of cultural preferences. The Wikipedia ranking of top 100 universities provides about 60 percent overlap with the Shanghai university ranking demonstrating the reliable features of this approach. At the same time WRWU incorporates all knowledge accumulated at 24 Wikipedia editions giving stronger highlights for historically important universities leading to a different estimation of efficiency of world countries in university education. The historical development of university ranking is analyzed during ten centuries of their history.

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