A Local PageRank Algorithm for Evaluating the Importance of Scientific Articles*

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Abstract

Co-citation networks, in which nodes represent single articles and directed edges represent a citation from a citing article to a cited article, describes the relation between citations of different papers have been widely studied previously (see e.g. [1, 2, 3]). Following the network approach, we define a modified PageRank algorithm and the PR-score to measure the influence of a single article by using its local co-citation network. We also calculate the reaching probability and RP-score of a paper starting at an arbitrary article of its co-citation network for the same purpose. We highlight the advantages of our methods by applying them on the celebrated paper of Jenő Egerváry that is underrated by the standard indices.

Keywords: Scientometric, PageRank, Citiation networks

References

[1] Chen, C. Visualising semantic spaces and author co-citation networks in digital libraries, *Information processing & management* Vol. 35 (1999), 401–420.

[2] Chen, P., Xie, H., Maslov, S., and Redner, S. Finding scientific gems with google's pagerank algorithm, *Journal of Informetrics* Vol. 1 (2007) 8–15.

[3] Jeong, H., Néda, Z., and Barabási, A. Measuring preferential attachment in evolving networks, *Europhysics Letters* Vol. 61 (2007), 567.

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