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PageRank Based Network Algorithms for Weighted Graphs with Applications to Wine Tasting and Scientometrics*

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Abstract

The PageRank algorithm was originally designed to determine the importance os home pages, and is a successful part of the Google browser. A generalization of it for weighted graphs have been considered, when the edges of the graphs are appropriately weighted to provide additional information when the connections have different meaning, importance or quality.

The algorithm was applied for rankings obtained in wine tasting to determine the quality or expertise of wine taster – providing a novel objective methodology for extracting merit. A similar algorithm will be discussed with applications in scientometrics to give a new measure of the quality of scientific publications – based on the citation structure. Results will be reported for the case of the Szeged Wine Fest competition data and for the scientometric qualification of the publications of Jenő Egerváry.

Keywords: PageRank, Weighted Graph, Wine tasting, Scientometrics

MSC: 90C30, 65K10

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