Docket #: S08-085

Random Alpha Pagerank (RAPr)

Stanford engineers have developed a patented algorithm that improves search results from ranking the objects of a database when viewed as a graph (e.g. a web graph). This system, Random Alpha Pagerank (RAPr), computes the importance of pages in a web graph using a random variable as a teleportation coefficient (compared to the standard PageRank algorithm which assumes a constant coefficient). This approach uncovers new characteristics that can be used to provide more relevant results for web searches, web spam detection, or gene/protein classification. It can also be used to derive more meaningful measures of importance by incorporating user behavior or domain specific knowledge.

Stage of Research
The inventors have completed a study that shows spam ranking with RAPr has a meaningful improvement in the performance of web-spam detection. They have also demonstrated that the model is valid for measured user behavior on the web.

Applications

- **Web searches** - may reveal patterns in user behavior, which may suggest advertising strategies
- **Web spam detection**
- **Gene/protein classification** - may be useful in identifying genes that are sensitive to perturbations in the Markov model

Advantages

- **More relevant results** - this model provides new features to uncover characteristics of a web graph that can be used to provide better search results
- **More capable modeling** - the model is flexible and lets you incorporate either user behavior or “anti”-user behavior to investigate items that users will

probably see or users will probably not see.

Publications

- Random Alpha PageRank Internet Math. Volume 6, Number 2 (2009), 189-236.

Patents

- Published Application: 20090276389
- Published Application: 20150220534

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