

PageRank with random walkers

$$\vec{v} = M\vec{v}.$$

- Surfers are **stationary**.
- The more important a page, and the more likely it is to have a surfer.
- \vec{v} is ... **the principal eigenvector** of M . (M stochastic has largest eigenval 1.)
- **Power iteration**: compute \vec{v} by iterative **matrix-vector multiplications**.
 - Stop when $||\vec{v}_t - \vec{v}_{t-1}|| \leq \epsilon$.
 - How eigenvectors are computed in large dimensions (eg. Lanczos method.)
 - Amenable to **MapReduce** parallelization.
- Equivalent to previous PageRank formulation:

$$v_i = \sum_{j: i \rightarrow j \in \mathcal{E}} \frac{v_j}{d_j}$$