

Building Successful Intellectual Communities

Ben Pace

Storytime

- 1997, Kleinberg, Cornell
- Use the link structure of the web itself to rank pages by importance
- Defined two classes of page

“Hubs” are pages which link to lots of “authorities”

“Authorities” are pages linked to by lots of “hubs”

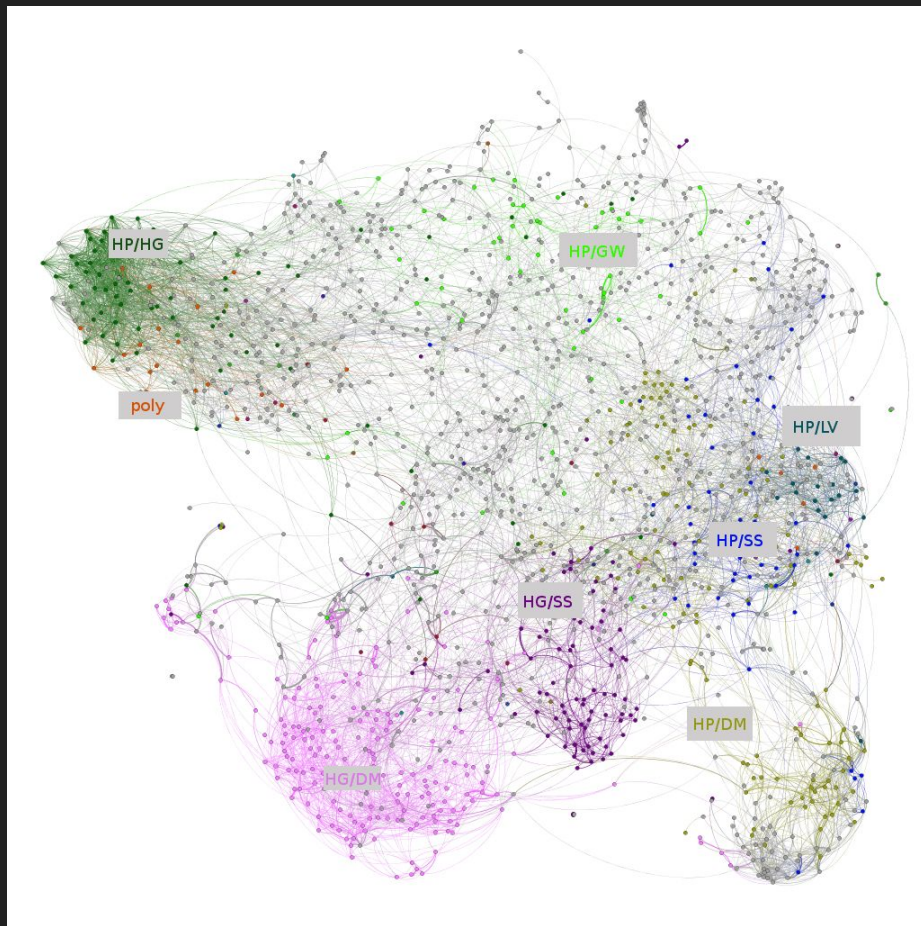
...anything wrong with that?

Iteratively

1. Give every page starting credits of 'trustworthiness'
2. Pass them equally out to all the pages it links to (whilst accumulating your own)
3. Each time, reduce the amount of credits passed by a factor $d < 1$

$$PR(A) = \frac{1-d}{N} + d \left(\frac{PR(B)}{L(B)} + \frac{PR(C)}{L(C)} + \frac{PR(D)}{L(D)} + \dots \right)$$

You can use PageRank for *other* things



Figuring out who likes different parts of Harry Potter fandom and use this to rank fan fiction

colah.github.io/posts/2014-07-FFN-Graphs-Vis/

My job is to *build tools for online research*, that allow a large interdisciplinary community ($n > 1,000$) to make progress on difficult problems

Problem: How to figure out what ideas to show to other users?

↑ [-] **Tiako** **Roman Archaeology** 3868 points 1 year ago* 🏆

↓ I wouldn't be surprised if there are more swimming

↑
16.5k

Michael Phelps beat a 2000 year old Olympic record
Are there any other ancient Olympic records that have

Users and comments accrue 'karma' from upvotes
and downvotes

This selects for popularity over usefulness, accuracy
and truth.

PageRank sorts search results by weighting their trustworthiness

The karma system weights each comment by its addition to the discussion

PageRank weights a link between page A and B by how much trust page A has

The karma system weights each vote the karma of the voter

What is 'd' in a research community?

$$PR(A) = \frac{1-d}{N} + d \left(\frac{PR(B)}{L(B)} + \frac{PR(C)}{L(C)} + \frac{PR(D)}{L(D)} + \dots \right)$$

d = how much you trust the people that
the people you trust trust (I think)

$$PR(A) = \frac{1-d}{N} + d \left(\frac{PR(B)}{L(B)} + \frac{PR(C)}{L(C)} + \frac{PR(D)}{L(D)} + \dots \right)$$

Website: LessWrong.com

Open Beta: LesserWrong.com

Development Server: [LessestWrong.com](https://lessestwrong.com)

Thanks!