Visualization of the Relations Between A Certain Paper and Its References and Citations in Acemap

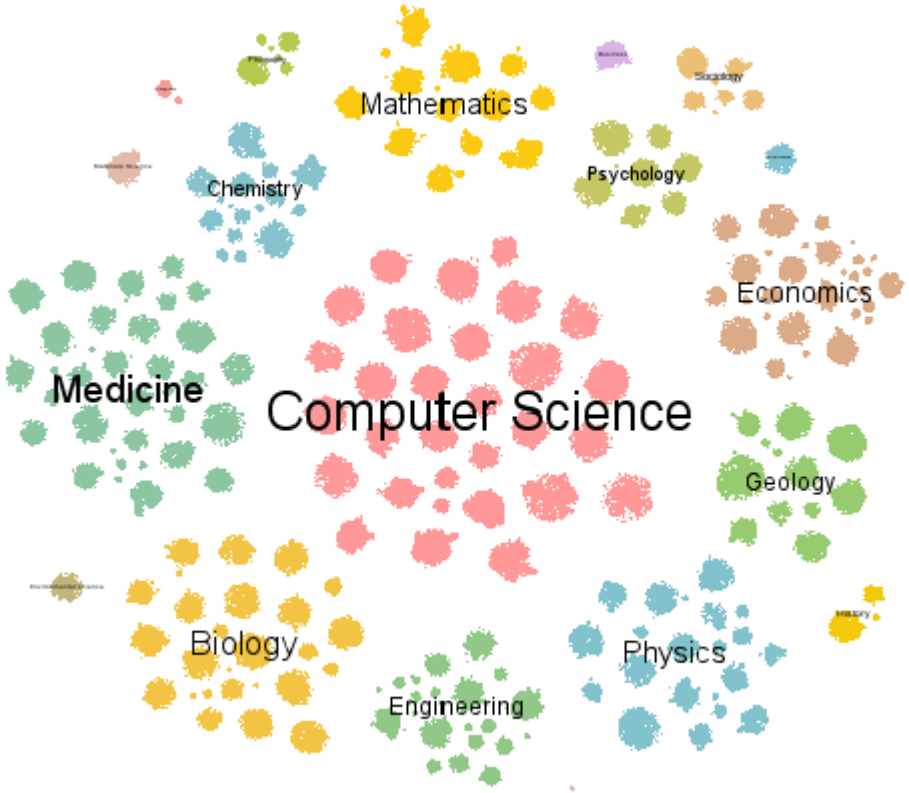
Zhaorun Han

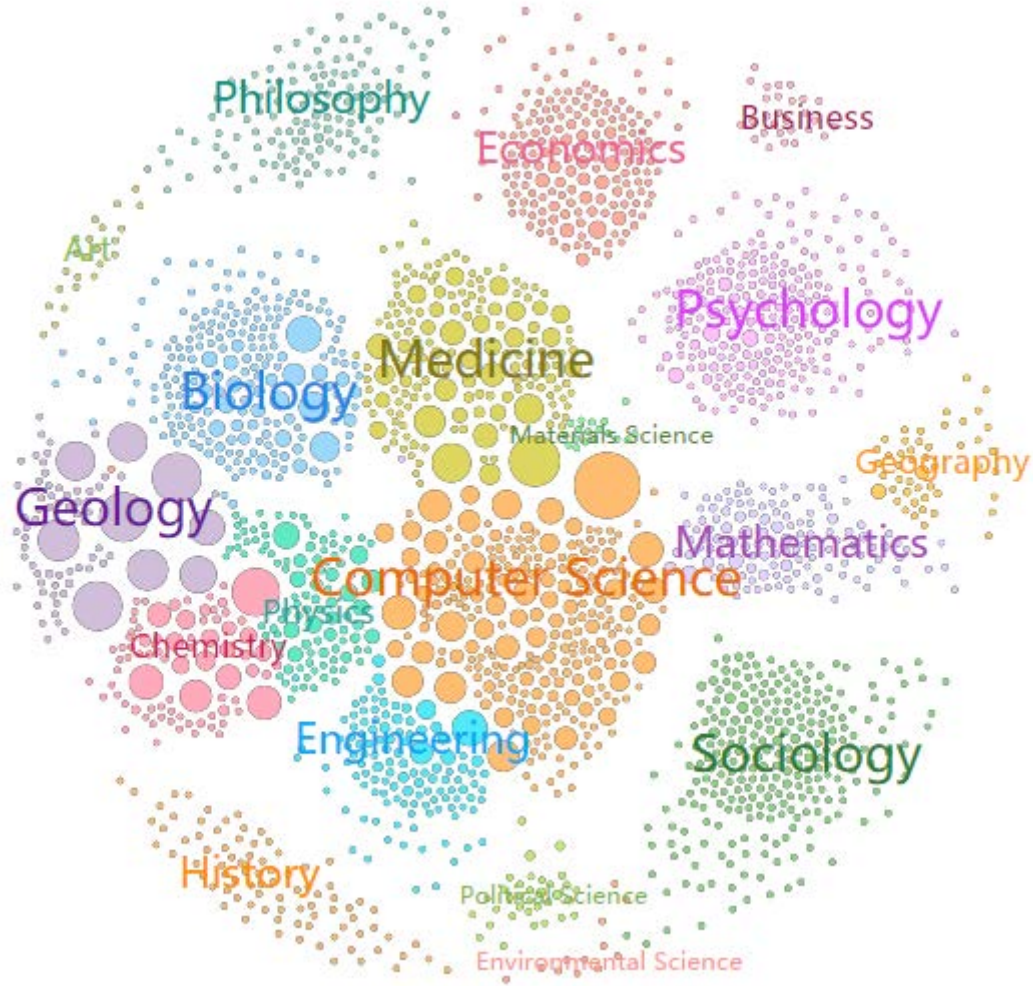
May 2017

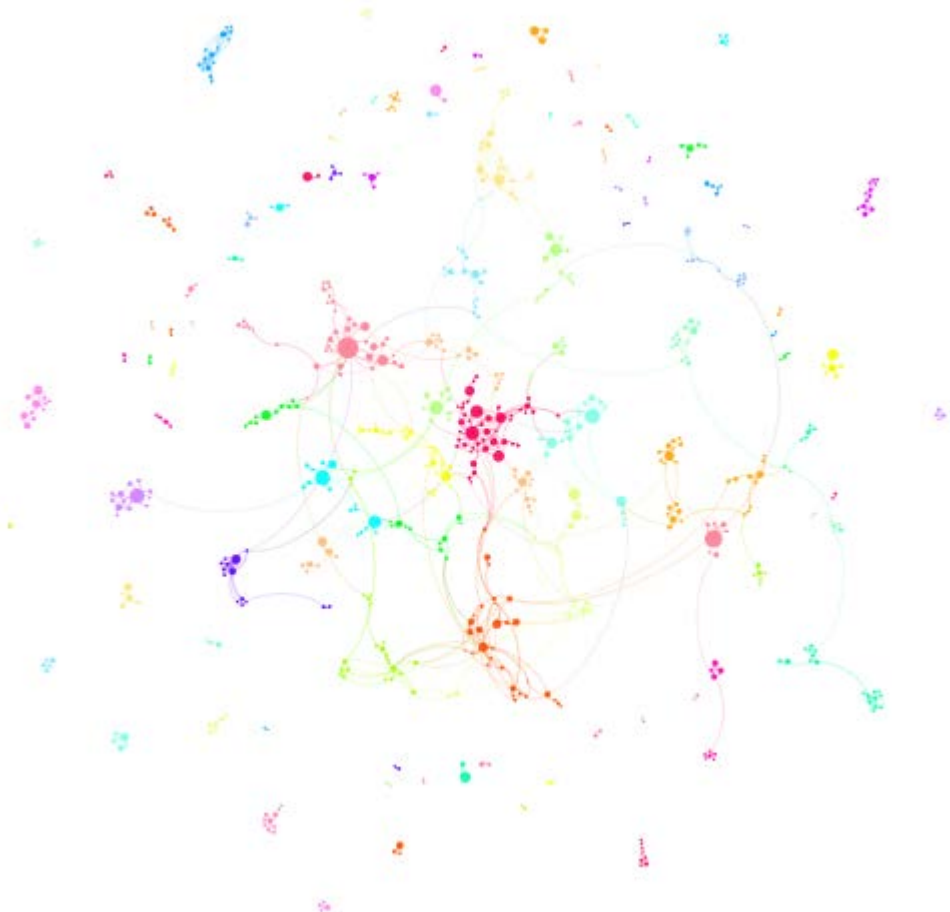
Contents

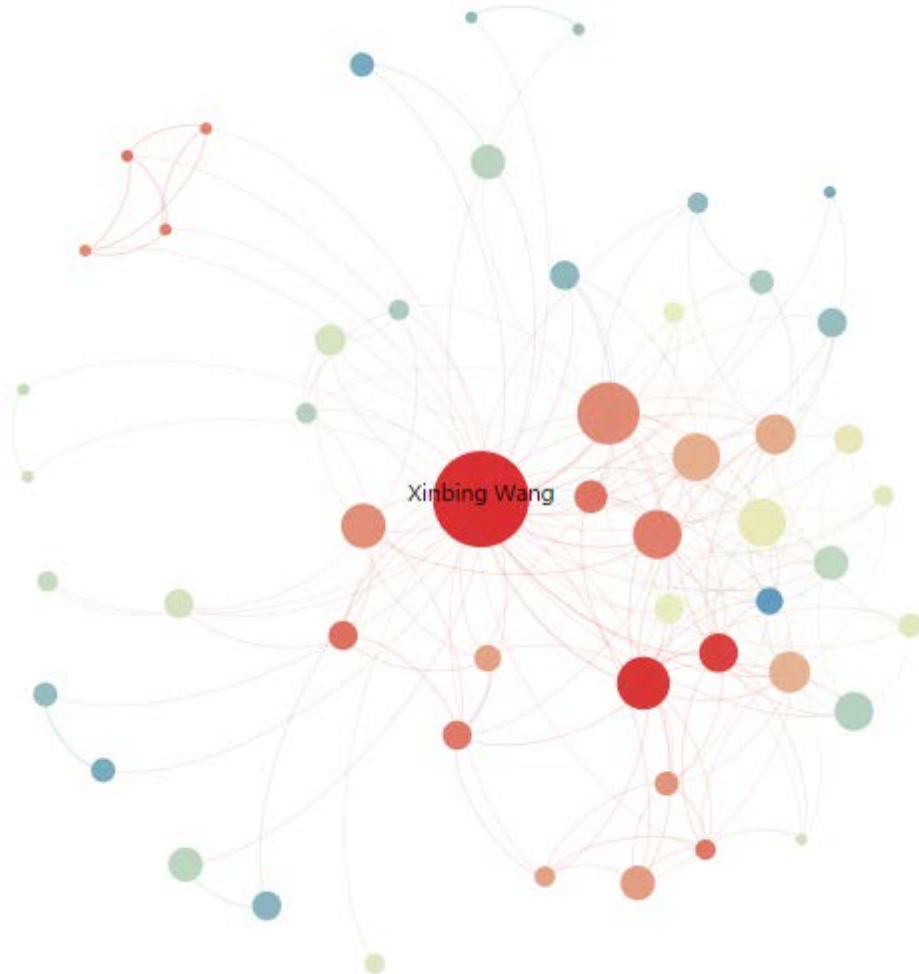
Introduction

- Academic papers: grows in an incredible speed
- Visualization: a good way to show structure & relation information
- Acemap
- Great information can be obtained from references and citations


Mathematics
Chemistry
Psychology
Economics
Medicine
Computer Science
Geology
Biology
Physics
Engineering


Philosophy
Economics
Business
Art
Psychology
Medicine
Biology
Materials Science
Geography
Geology
Mathematics
Computer Science
Physics
Chemistry
Engineering
Sociology
History
Political Science
Environmental Science

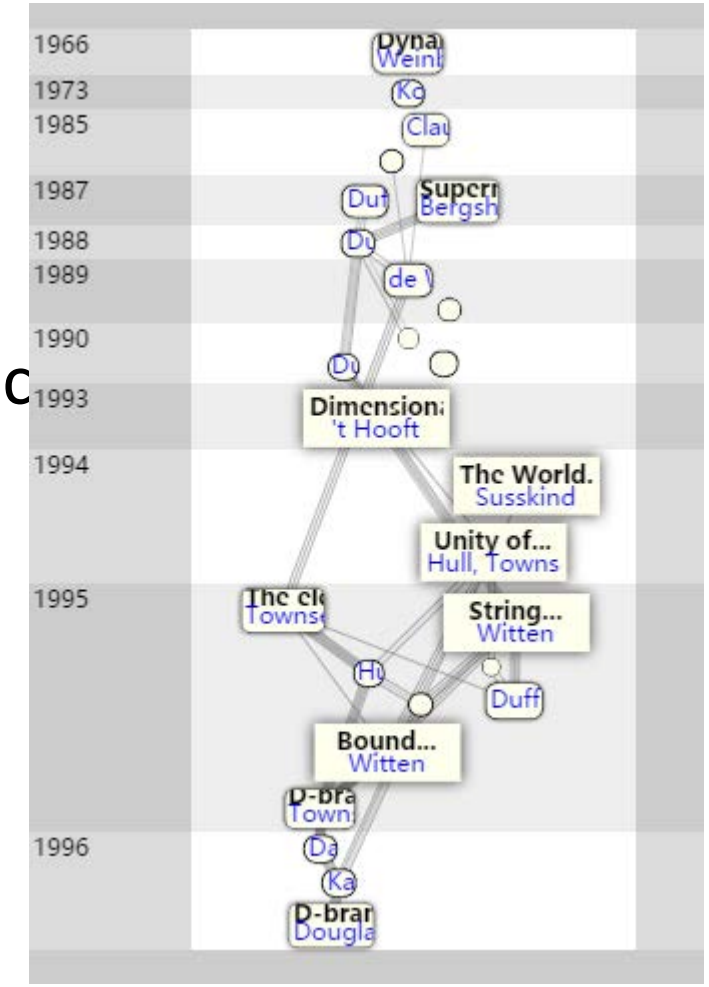


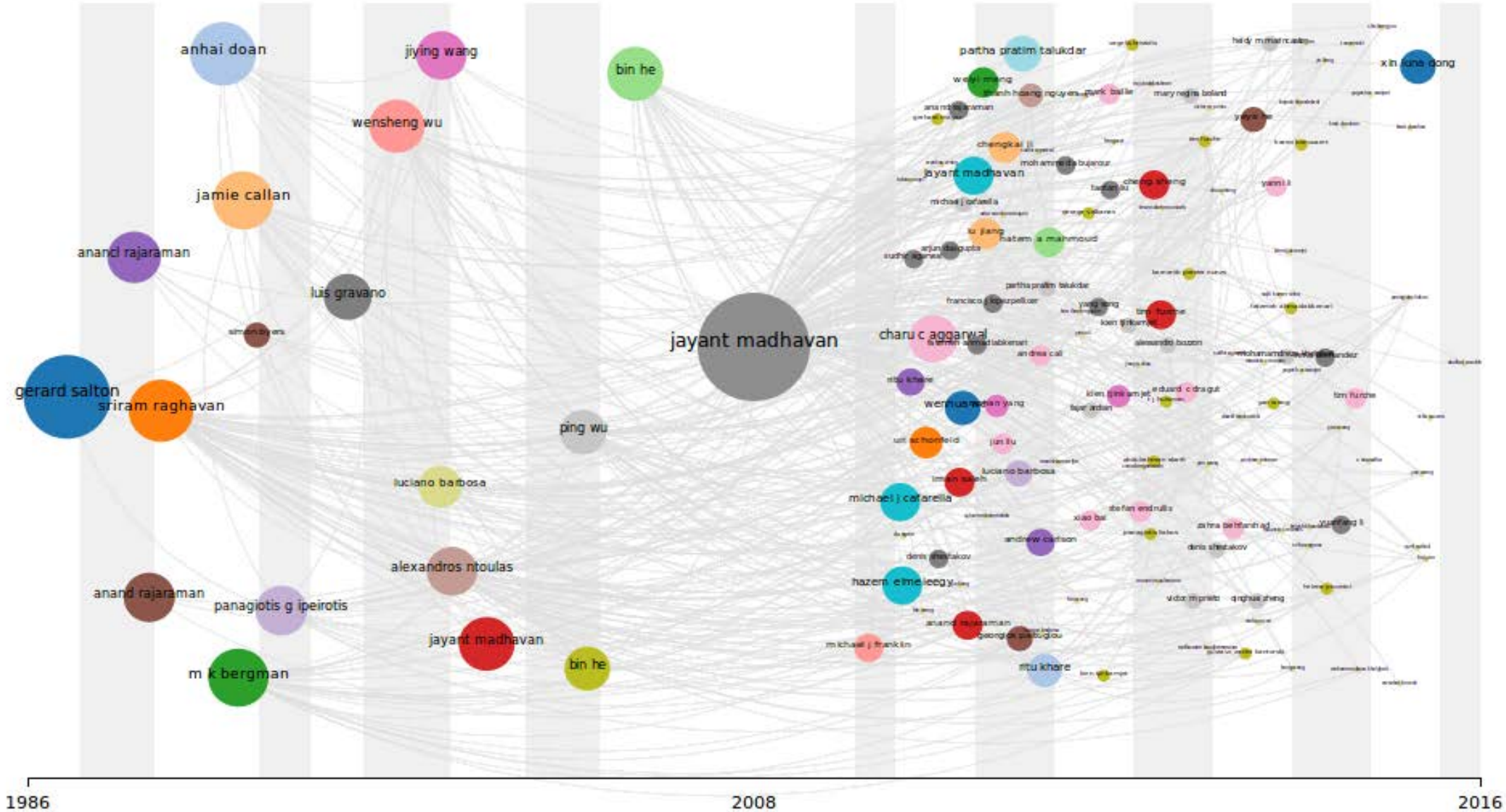

Xinbing Wang

Related Work

- Schemes of visualization on referenc
  - Histography
  - co-citation analysis
  - co-cited-author analysis

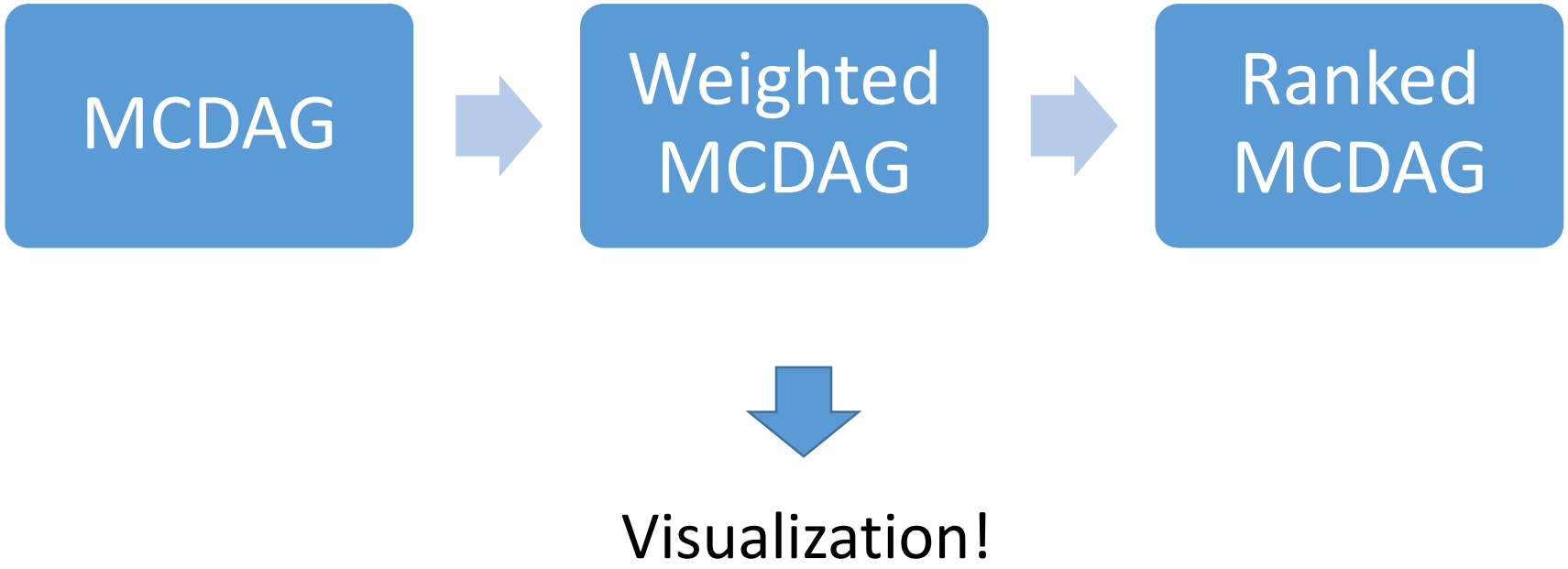
- Paperscape.org




anhai doan
jiying wang
wensheng wu
jamie callan
anandi rajaraman
luis gravano
gerard salton
sriram raghavan
luciano barbosa
alexandros ntoulas
anand rajaraman
panagiotis g ipeirotis
jayant madhavan
m k bergman
bin he
ping wu
jayant madhavan
bin he
partha pratim talukdar
charu c aggarwal
michael j cafarella
hazem elmeleegy
andrew carlson
xin luna dong
1986
2008
2016

KDP Algorithm

- Overall procedure



KDP Algorithm

- PageRank

$$PR(p_u) = \frac{1-d}{N} + d \times \sum_{p_v \in I(p_u)} \frac{PR(p_v)}{L(p_v)}$$

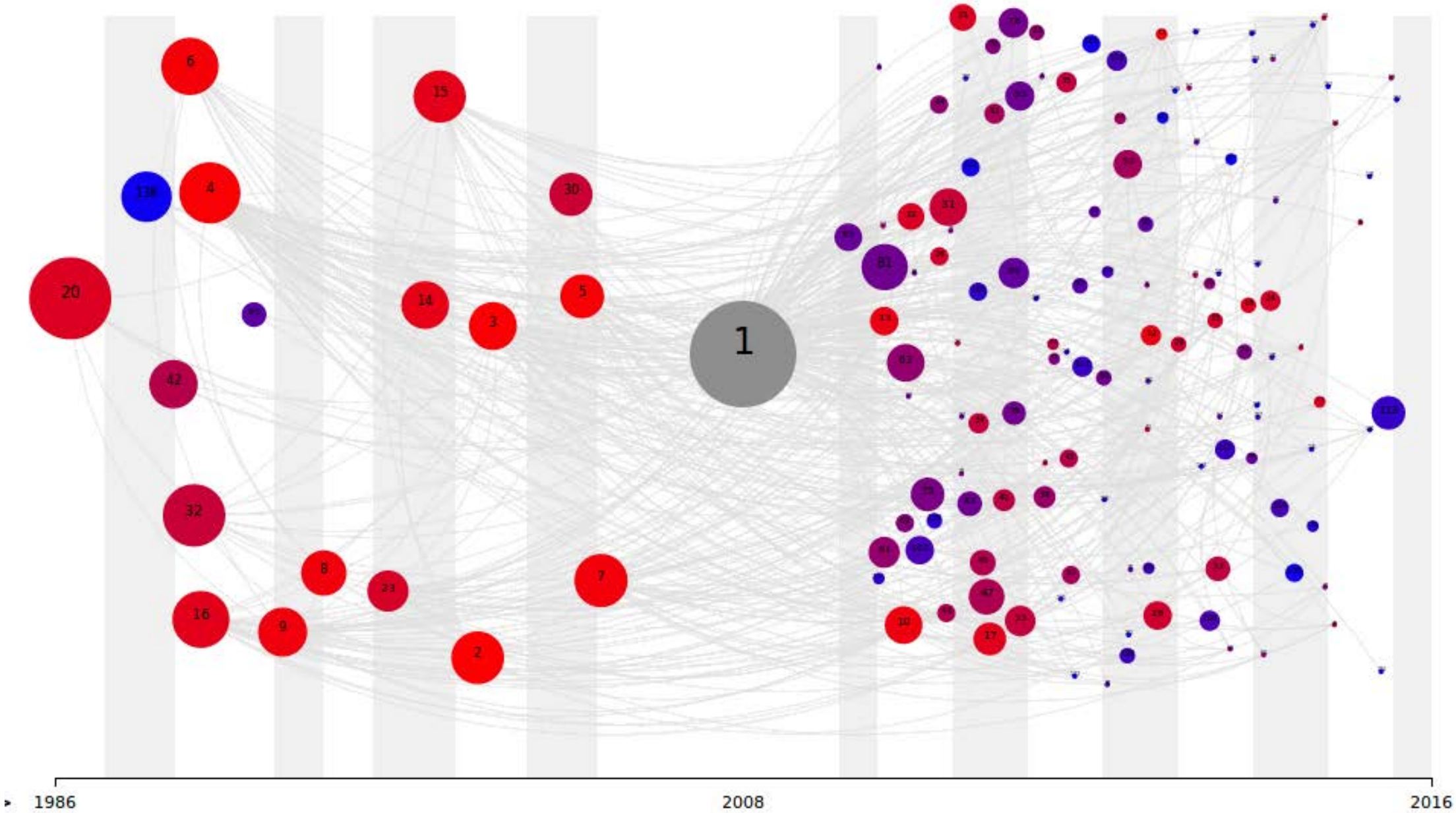
- Weighted PageRank

$$PR(p_u) = \frac{1-d}{N} + d \times \sum_{p_v \in I(p_u)} PR(p_v) \cdot W$$

- Double-Damping PageRank

$$PR(p_u) = \frac{\alpha}{N} + \beta \times \sum_{p_v \in I(p_u)} PR(p_v) \cdot W_1 + \gamma \times \sum_{p_v \in O(p_u)} PR(p_v) \cdot W_2$$

$$\alpha + \beta + \gamma = 1$$


6
15
4
30
20
14
3
5
1
42
32
8
23
7
16
9
2
81
1986
2008
2016

Demo

Conclusion and Future Work

- A new Paper Map
- Paper Rank: efficient and helpful

- Relations between two papers
- LCR & LCS Analysis

Q&A

Thanks for watching!