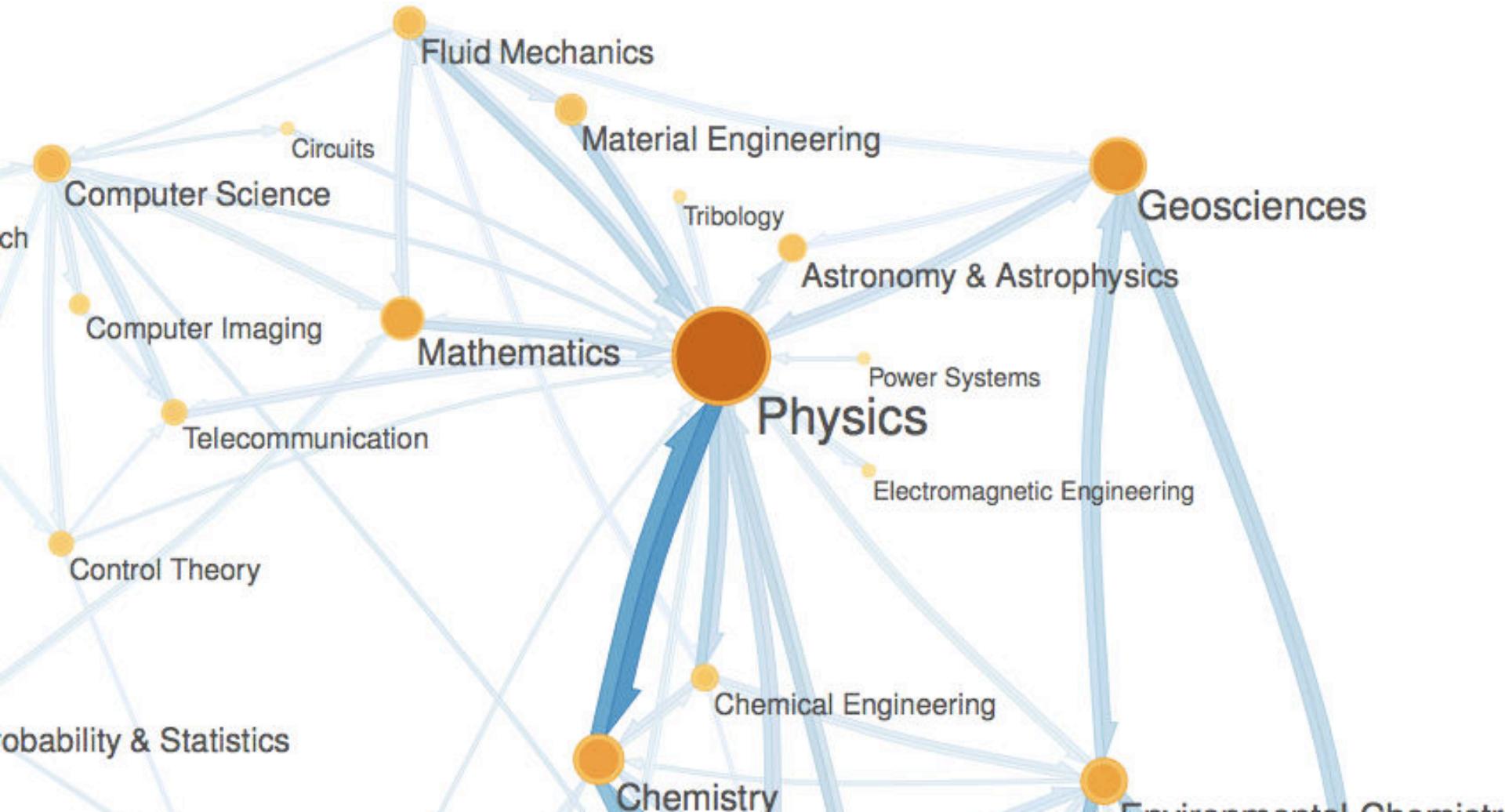
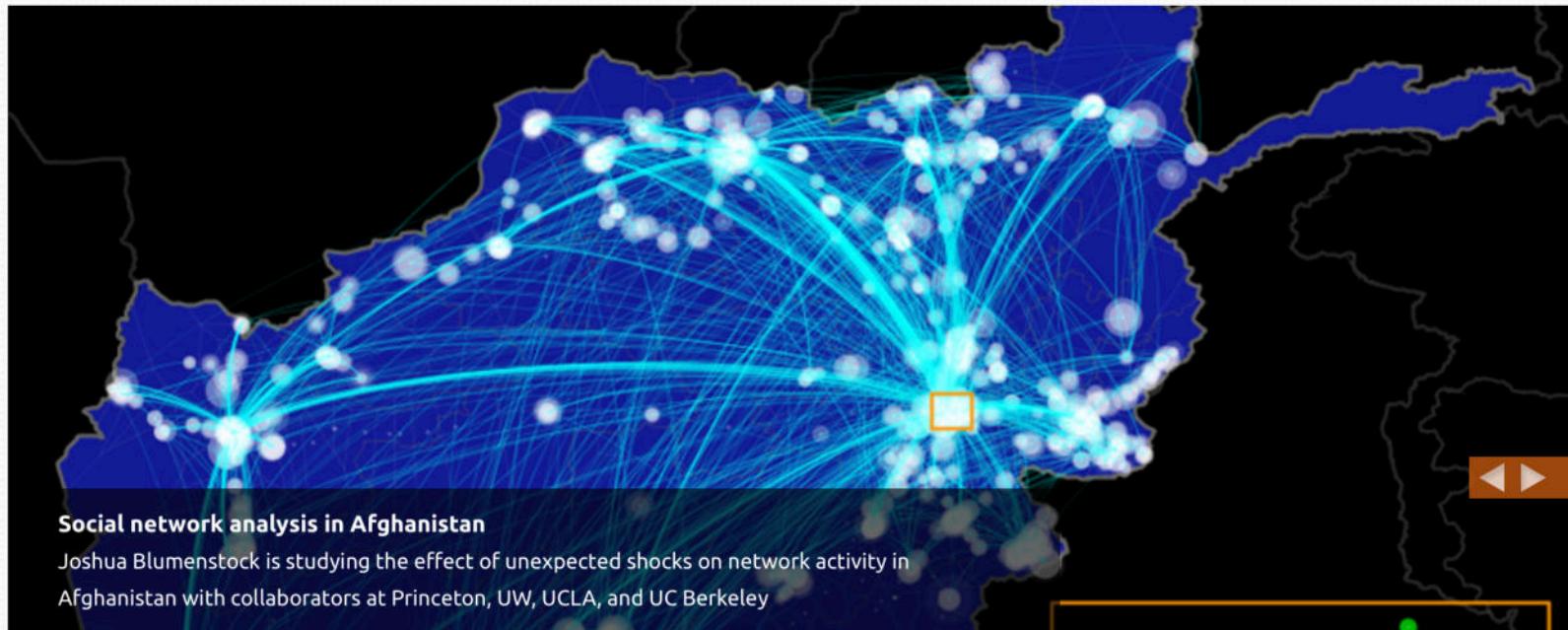


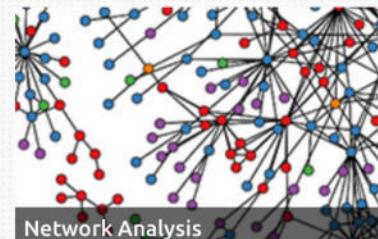
Eigenfactor Recommends

Jevin D. West, Ian Wesley-Smith & Ralph Dandrea
Information School, University of Washington and ²ITX, SSRN





Research Focus Areas



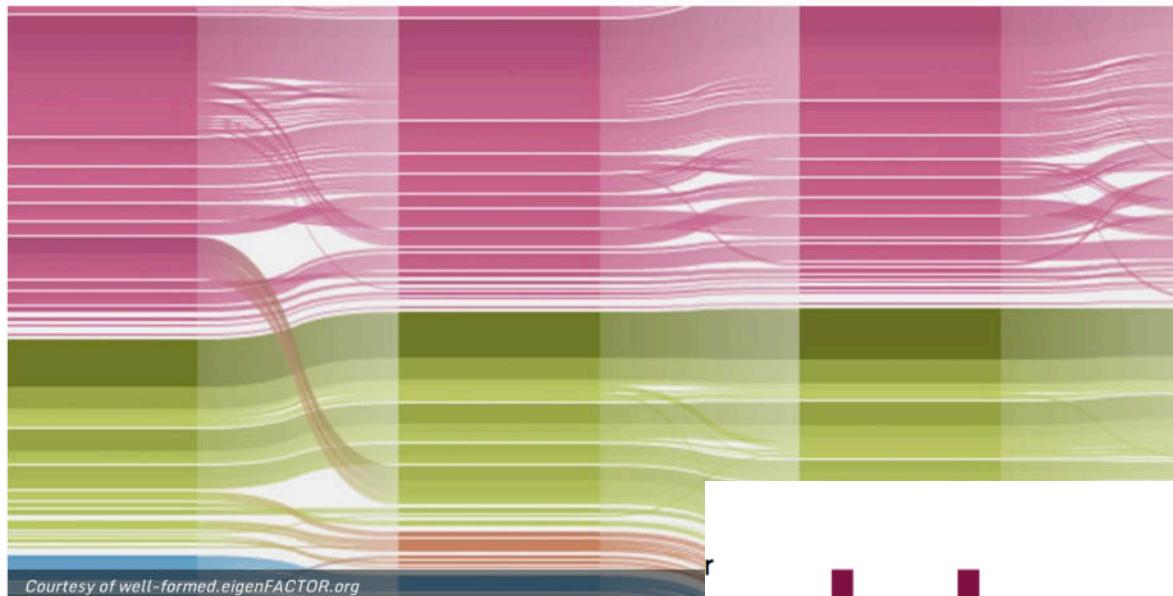
News and Updates

28

Blumenstock at Population Association of America

What we do

The DataLab is the nexus for research on Data Science and Analytics at the UW iSchool. We study **large-scale, heterogeneous human data** in an



DATA-DRIVEN DISCOVERY

Data Science
Environments

data science

for community include effort group administrative staff visiting director collaboration aligned establish project evaluation bridge graduate research sciences fellows activities professor program institute

space section education UW computer people participants established campus success fields year impact time including long-term environments software grant number ethnography steering appendices methods programs new work funded

center educational physical university one process described breakthrough

metrics committee social across funding scientific methodology methodologies anticipate

environment studio individuals see alternative open students use

areas budget reproducibility

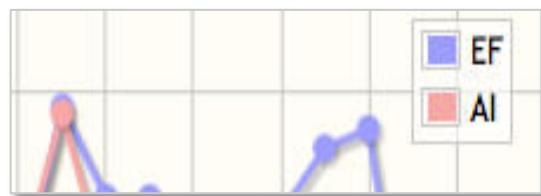
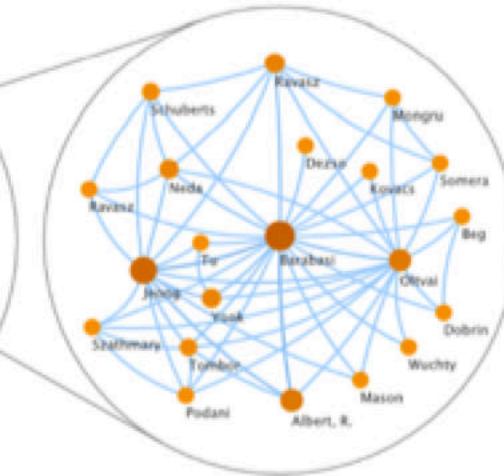
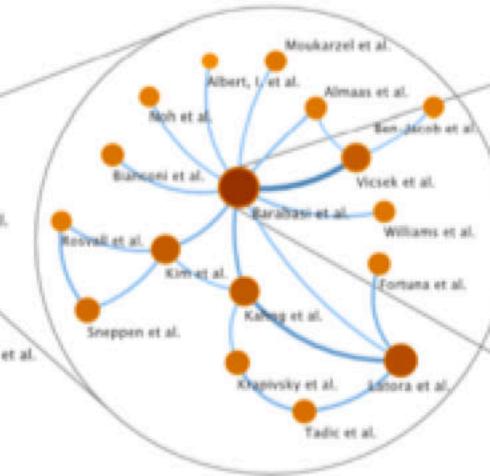
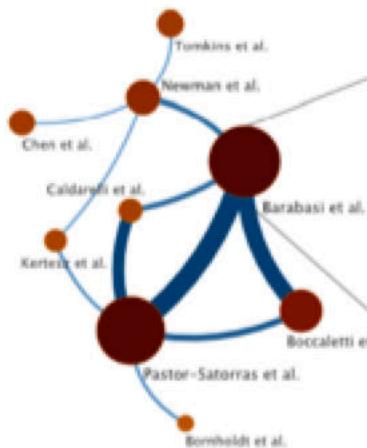
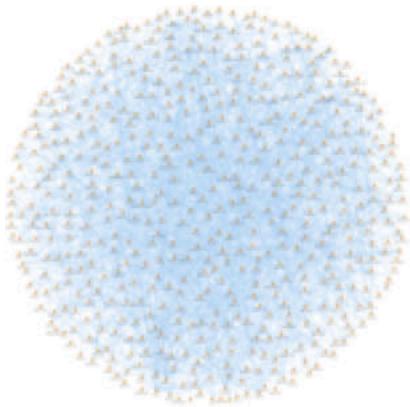
committee social across funding scientific methodology methodologies anticipate

environment studio individuals see alternative open students use

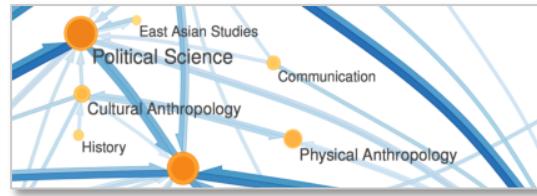
areas budget reproducibility

Jevin West

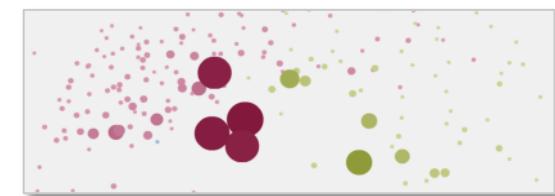
Assistant Professor | iSchool



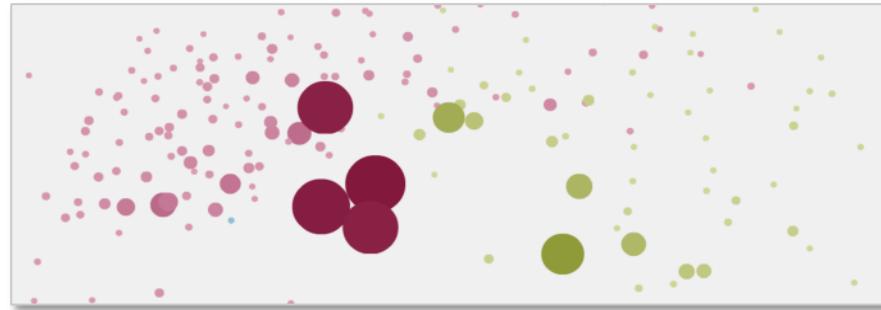
Ranking



Mapping



Navigating



Navigating

Google Scholar Problems

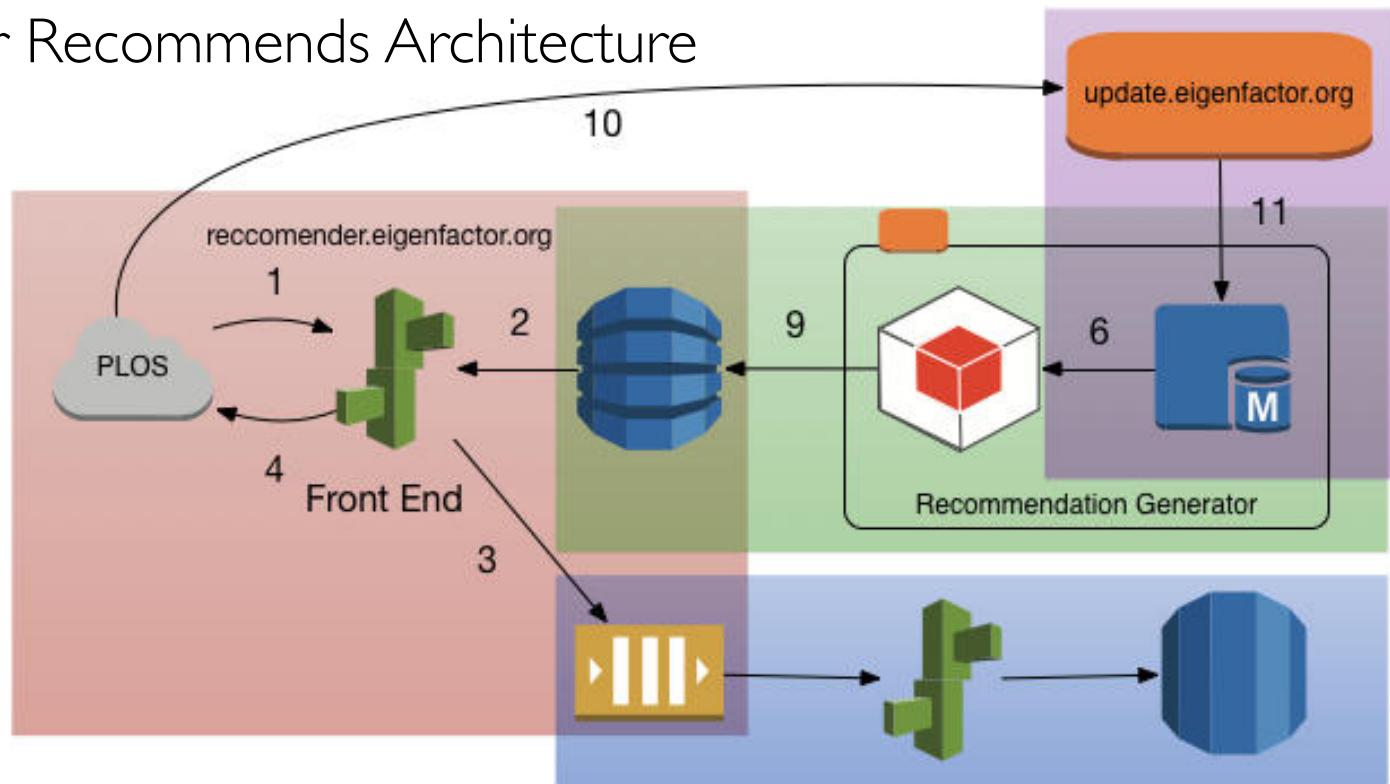
- Unknown algorithm
- Unknown corpus
- Non-customizable
- Non-extensible
- No community development

When you know what you are looking for,
Scholar can usually find it. When you don't,
Scholar is useless. We need tools for *navigation*.

Recommendation Platform

recommends.eigenfactor.org

Eigenfactor Recommends Architecture



Recommendation Request

1. Request for recommendation for paper
2. Front-end looks up DOI on a DynamoDB
3. Front-end logs recommendations
4. Front-end returns recommendations

Feedback

1. PLOS sends feedback to the front end
3. The front end logs the feedback in SQS

Analytics

TBD

Recommendation Generation

5. Cron job starts recommender
6. Application reads citation network from DB
7. Application writes recommendations to CSV
8. CSV file is backed up to S3 for offline analysis
9. Transformer takes CSV file and pushes to DynamoDB

Citation DB Updates

10. PLOS calls a private API, providing new DOIs and citations in those documents
11. Application pushes changes to SQL DB

0707.0609

Recommendations

Results for:

-    Maps Of Random Walks On Complex Networks Reveal Community Structure - 2007

Expert

-    Finding And Evaluating Community Structure In Networks - 2003
-    Defining And Identifying Communities In Networks - 2003
-    Fast Algorithm For Detecting Community Structure In Networks - 2003
-    Modularity And Community Structure In Networks - 2006
-    Self-Similar Community Structure In Organisations - 2002

Classic

-    Statistical Mechanics Of Complex Networks - 2001
-    Classes Of Behavior Of Small-World Networks - 1999
-    The Structure And Function Of Complex Networks - 2003
-    Evolution Of Networks - 2001
-    The Structure Of Scientific Collaboration Networks - 2000

→ recommends.eigenfactor.org

Scholar

About 39,500 results (0.05 sec)

[Articles](#)[Case law](#)[My library](#)[Any time](#)[Since 2015](#)[Since 2014](#)[Since 2011](#)[Custom range...](#)[Sort by relevance](#)[Sort by date](#) include patents include citations[Create alert](#)**Ecological theory suggests that antimicrobial cycling will not reduce antimicrobial resistance in hospitals****CT Bergstrom, M Lo, M Lipsitch - Proceedings of the ... , 2004 - National Acad Sciences**Abstract Hospital-acquired infections caused by antibiotic-resistant bacteria pose a grave and growing threat to public health. **Antimicrobial cycling**, in which two or more antibiotic classes are alternated on a time scale of months to years, seems to be a leading ...[Cited by 215](#) [Related articles](#) [All 17 versions](#) [Cite](#) [Save](#)**Cycling empirical antimicrobial agents to prevent emergence of antimicrobial-resistant Gram-negative bacteria among intensive care unit patients****DK Warren, HA Hill, LR Merz, MH Kollef... - Critical care ... , 2004 - journals.lww.com**

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Abstract Several discrete strategies have been suggested to prevent or reduce microbial resistance to antimicrobials, including optimal use of the agents (also known as good stewardship); control, removal, or restriction of antimicrobials; use of antimicrobials in ...

[Cited by 71](#) [Related articles](#) [All 5 versions](#) [Cite](#) [Save](#)**Comparison of antimicrobial cycling and mixing strategies in two medical intensive care units*****JA Martínez, JM Nicolás, F Marco... - Critical care ... , 2006 - journals.lww.com**

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[Cited by 79](#) [Related articles](#) [All 6 versions](#) [Cite](#) [Save](#)**Routine cycling of antimicrobial agents as an infection-control measure****RA Weinstein, SK Fridkin - Clinical infectious diseases, 2003 - cid.oxfordjournals.org**Abstract **Antimicrobial cycling** is the deliberate, scheduled removal and substitution of specific antimicrobials or classes of antimicrobials within an institutional environment (either hospital-wide or on a floor-by-floor basis). It could be used to reduce the incidence of

Recommendations

Results for:



Ecological Theory Suggests That Antimicrobial Cycling Will Not Reduce Antimicrobial Resistance In Hospitals - 2003

Expert

- C The Relationship Between The Volume Of Antimicrobial Consumption In Human Communities And The Frequency Of Re
- C Evaluating Treatment Protocols To Prevent Antibiotic Resistance - 1996
- C The Epidemiology Of Antibiotic Resistance In Hospitals: Paradoxes And Prescriptions - 1999
- C The Transmission Dynamics Of Antibiotic-Resistant Bacteria: The Relationship Between Resistance In Commensal Orga
- C Persistent Colonization And The Spread Of Antibiotic Resistance In Nosocomial Pathogens: Resistance Is A Regional Pr

Classic

- C The Crisis In Antibiotic Resistance - 1991
- C Epidemiology Of Drug Resistance: Implications For A Post-Antimicrobial Era - 1991
- C Drug-Resistant Salmonella In The United States: An Epidemiologic Perspective - 1985
- C The Relationship Between The Volume Of Antimicrobial Consumption In Human Communities And The Frequency Of Re
- C Evaluating Treatment Protocols To Prevent Antibiotic Resistance - 1996



Navigating

Viziometrics.org

membrane Visual Search Switch to Article View

Scheme Visualization Table Photo Equation

The interface displays a collection of scientific visualizations and data analysis tools, likely from a bioinformatics database. The top row includes:

- A schematic diagram showing the stages of viral membrane fusion: Pre-fusion, Extended intermediate, Collapse of intermediate, Hemifusion, and Fusion pore (post-fusion).
- A graph of membrane tension versus time, with regions labeled I (Tension), II (Hemifusion), and III (Fusion pore).
- 3D molecular models illustrating the transition through hemifusion and the formation of a fusion pore.
- 3D molecular models showing the final fused state.

The middle section contains several panels:

- Panel A shows a 3D model of a membrane fusion event.
- Panel B shows a 3D model of a vesicle.
- Panel C is a flowchart of the membrane fusion process, showing the progression from vesicle budding to vesicle docking, vesicle priming, hemifusion, and finally the formation of a fusion pore.
- Panel D is a screenshot of the TCDB (Transport Classification Database) showing a search results page for "Fusion Proteins".
- Panel E is a screenshot of the TCDB showing a detailed entry for a specific protein.

The bottom section is a grid of experimental data and analysis:

- Panel A shows a series of diagrams illustrating the stages of endocytosis and phagocytosis.
- Panel B shows a table of gene expression data and corresponding fluorescence microscopy images.
- Panel C shows a series of fluorescence microscopy images of cells.
- Panel D shows a series of fluorescence microscopy images of cells.
- Panel E shows a series of fluorescence microscopy images of cells.
- Panel F shows a series of fluorescence microscopy images of cells.
- Panel G shows a series of fluorescence microscopy images of cells.
- Panel H shows a series of fluorescence microscopy images of cells.
- Panel I shows a series of fluorescence microscopy images of cells.
- Panel J shows a series of fluorescence microscopy images of cells.
- Panel K shows a series of fluorescence microscopy images of cells.
- Panel L shows a series of fluorescence microscopy images of cells.
- Panel M shows a series of fluorescence microscopy images of cells.
- Panel N shows a series of fluorescence microscopy images of cells.
- Panel O shows a series of fluorescence microscopy images of cells.
- Panel P shows a series of fluorescence microscopy images of cells.
- Panel Q shows a series of fluorescence microscopy images of cells.
- Panel R shows a series of fluorescence microscopy images of cells.
- Panel S shows a series of fluorescence microscopy images of cells.
- Panel T shows a series of fluorescence microscopy images of cells.
- Panel U shows a series of fluorescence microscopy images of cells.
- Panel V shows a series of fluorescence microscopy images of cells.
- Panel W shows a series of fluorescence microscopy images of cells.
- Panel X shows a series of fluorescence microscopy images of cells.
- Panel Y shows a series of fluorescence microscopy images of cells.
- Panel Z shows a series of fluorescence microscopy images of cells.

Eigenfactorizer

The screenshot shows the PubMed search results for the query "vitamin d". The results are sorted by Recently Added, with 20 items per page, currently on page 1 of 2751. The results include:

- Vitamin d and physical performance in elderly subjects: the pro.v.a study.**
Toffanello ED, Perissinotto E, Sergi G, Zambon S, Musacchio E, Maggi S, Coin A, Sartori L, Corti MC, Baggio G, Crepaldi G, Manzato E.
PLoS One. 2012;7(4):e34950. Epub 2012 Apr 23.
PMID: 22539951 [PubMed - in process] [Free Article](#)
[Related citations](#)
- Vitamin D3 Therapy Corrects the Tissue Sensitivity to Angiotensin II Akin to the Action of a Converting Enzyme Inhibitor in Obese Hypertensives: An Interventional Study.**
Vaidya A, Sun B, Larson C, Forman JP, Williams JS.
J Clin Endocrinol Metab. 2012 Apr; 120: [Epub ahead of print]
PMID: 22539586 [PubMed - as supplied by publisher]
[Related citations](#)
- Quality assurance study of the use of preventative therapies in glucocorticoid-induced osteoporosis in early inflammatory arthritis: results from the CATCH cohort.**
McKeown E, Bykerk VP, De Leon F, Bonner A, Therne C, Hitchon CA, Boire G, Haraoui B, Ferland DS, Keystone EC, Pope JE; on behalf of the CATCH Investigators.
Rheumatology (Oxford). 2012 Apr 25. [Epub ahead of print]
PMID: 22539481 [PubMed - as supplied by publisher]
[Related citations](#)
- Vitamin D status is associated with sociodemographic factors, lifestyle and metabolic health.**
Jääskeläinen T, Knekt P, Mänttäri J, Saarela-Jäske L, Männistö S, Heliövaara M, Järvinen R.
Eur J Nutr. 2012 Apr 27. [Epub ahead of print]
PMID: 22538929 [PubMed - as supplied by publisher]
[Related citations](#)
- Association among Vitamin D, Oral Candidiasis, and Calprotectinemia in HIV.**
Sroussi HY, Burke-Miller J, French AL, Adeyemi OM, Weber KM, Lu Y, Cohen M.
J Dent Res. 2012 Apr 25. [Epub ahead of print]
PMID: 22538413 [PubMed - as supplied by publisher]
[Related citations](#)

Send to: **Filter your results:**

- All (55001)
- Free Full Text (10614)**
- Review (7923)

[Manage Filters](#)

Related searches

- vitamin d deficiency
- vitamin d supplementation
- vitamin d receptor
- calcium vitamin d
- vitamin d cardiovascular

Titles with your search terms

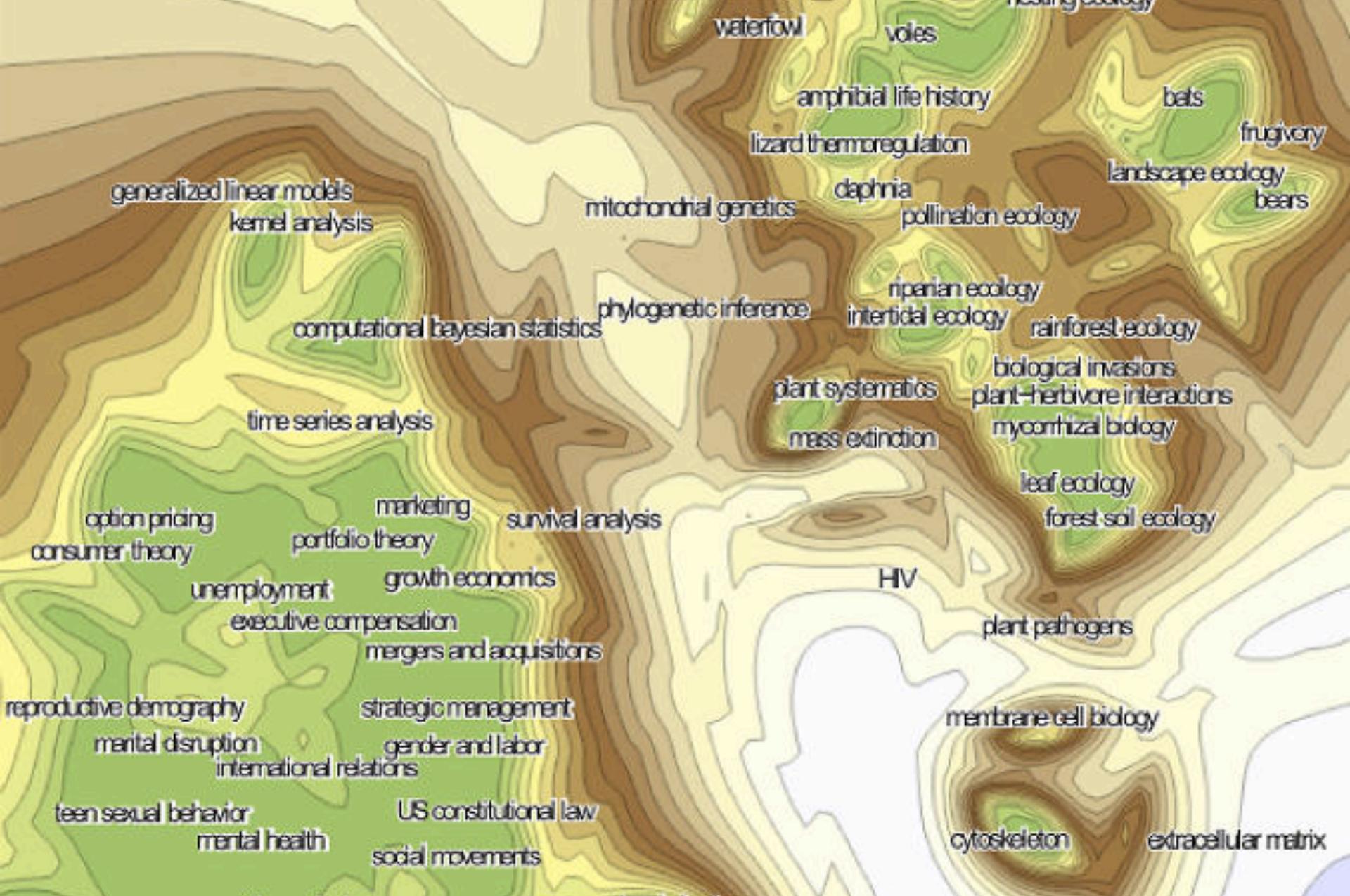
- Vitamin D and calcium: a systematic review of health outcome [Evid Rep Technol Assess (Full ...)]
- Systematic review: Vitamin D and calcium supplementation in preve [Ann Intern Med. 2010]
- Vitamin D: an evidence-based review. [J Am Board Fam Med. 2009]

[See more...](#)

4525 free full-text articles in PubMed Central

- Vitamin D receptor gene polymorphisms and colorectal cancer [World J Gastroenterol. 2012]
- Factors Associated with Vitamin D Deficiency and Inadequacy are [ISRN Obstet Gynecol. 2012]
- Association between Micronutrients (Vitamin A, D, Iron) and Schistosome [J Parasitol Res. 2012]

Chrome, Web Browser Extension



Vilhena et al. (2014) Finding Cultural Holes: How Structure and Culture Diverge in Networks of Scholarly Communication. *Sociological Science*. Vol 1

How do we validate the utility of scholarly recommendation methods?

Experiments



560,000 papers - 272,000 authors - 2.4 million citations

1.7 million users



Ian Wesley-Smith



Ralph Dandrea

Experimental Setup

SSRN - Social Science Research Network

Paper Title

Author #1

Author #2

Januaray 1st, 2015

1

Paper Stats

Views
Downloads
Download Rank
References

2

Abstract

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Vestibulum faucibus, justo vel volutpat feugiat, metus sapien scelerisque nunc, at tristique neque est nec velit. Nam lobortis diam ac auctor faucibus. Praesent non urna ac metus rutrum consectetur ac eu massa. Aliquam sit amet urna iaculis sem bibendum euismod. Vestibulum vulputate enim felis, eu maximus est ullamcorper nec. Vestibulum congue eu sapien eu bibendum. Aenean id purus finibus, pellentesque est in, iaculis metus. Phasellus posuere bibendum ligula vitae sollicitudin. Sed sit amet quam velit. Ut non ipsum vitae lorem tristique convallis non at augue. Cras ultricies leo eu nunc consequat, in pretium elit sollicitudin. Sed placerat euismod urna, non bibendum lacus tempus vel. Duis quis justo imperdiet mi gravida tincidunt id id felis. Donec pellentesque arcu vitae urna varius sollicitudin. Donec pellentesque a risus a viverra.

Download

Recommended

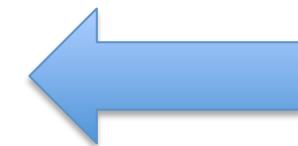
- 1) Title by Author
- 2) Title by Author
- 3) Title by Author

More

3

- 4) Title by Author
- 5) Title by Author
- 6) Title by Author
- 7) Title by Author
- 8) Title by Author
- 9) Title by Author
- 10) Title by Author

4



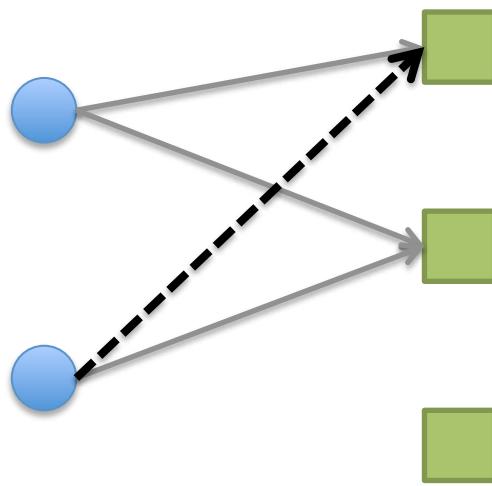
Co-download

(85%)

Eigenfactor

(15%)

Downloads

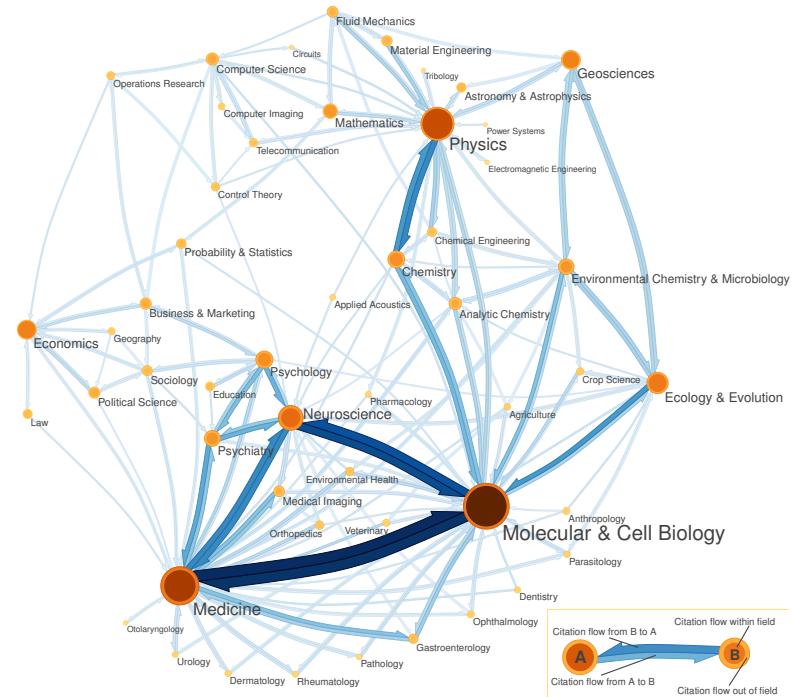


People

Papers

- Utilizes download paper of similar readers

Citations



- Utilizes hierarchical structure of citation graph and the relative position of papers

Algorithm	Appearances		Clicks		Downloads		C/A	D/C	D/A
	Count	%	Count	%	Count	%			
Control	26805	2.28%	174	0.40%	3	0.15%	0.65%	1.72%	0.01%
Co-Download	1102847	93.75%	43405	98.64%	1960	98.54%	3.94%	4.52%	0.18%
EF Expert	21837	1.86%	208	0.47%	12	0.60%	0.95%	5.77%	0.05%
EF Serendipity	24941	2.12%	215	0.49%	14	0.70%	0.86%	6.51%	0.06%

Table 2. Data collected from January 27th, 2015 through February 3rd, 2015 inclusive.

→ Co-downloads had a higher click through rate but *Eigenfactor Recommends* had the highest downloads per click

Position Effects



Position	Appearances		Clicks		Downloads		C/A	D/C	D/A
	Count	%	Count	%	Count	%			
1	412188	37.37	13067	30.10	716	36.53	3.17	5.48	0.17
2	357476	32.41	5674	13.07	463	23.62	1.59	8.16	0.13
3	327801	29.72	5245	12.08	417	21.28	1.60	7.95	0.13

Table 4. Co-Download Recommendations by Position

Complementarity?

Algorithm	Paper Title	Count
Co-Download	An Intermarket Approach to Tactical Risk Rotation: Using the Signaling Power of Treasuries to Generate Alpha and Enhance Asset Allocation	451
	Factor Investing	262
	A Five-Factor Asset Pricing Model	249
EF Serendipity	An Economic Evaluation of Empirical Exchange Rate Models	3
	Strategic Hedge Fund of Fund Portfolio Construction	3
	Hyperinflation - It's More than Just a Monetary Phenomenon	3
EF Expert	Games and Information, Third Edition, Preface	6
	Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature	5
	The Tactical and Strategic Value of Commodity Futures	5

Table 5. A comparison of the top clicked recommendations generated by Co-Download and Eigenfactor

Citation + Download Recommendations

Conclusions

- We can do better than Google Scholar...
- Recommendation Platform
- Bibliometrics → Information Retrieval
 - Viziometrics.org
 - Eigenfactorizer
 - Mapping jargon
- Eigenfactor Recommends

Acknowledgements

Ian Wesley-Smith

Ralph Dandrea

Carl Bergstrom

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www.jevinwest.org

