Research Publications and Presentations

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1402

Is it doable?

HOW CAN WE MEASURE A SUCCESSFUL RESEARCH?

Research

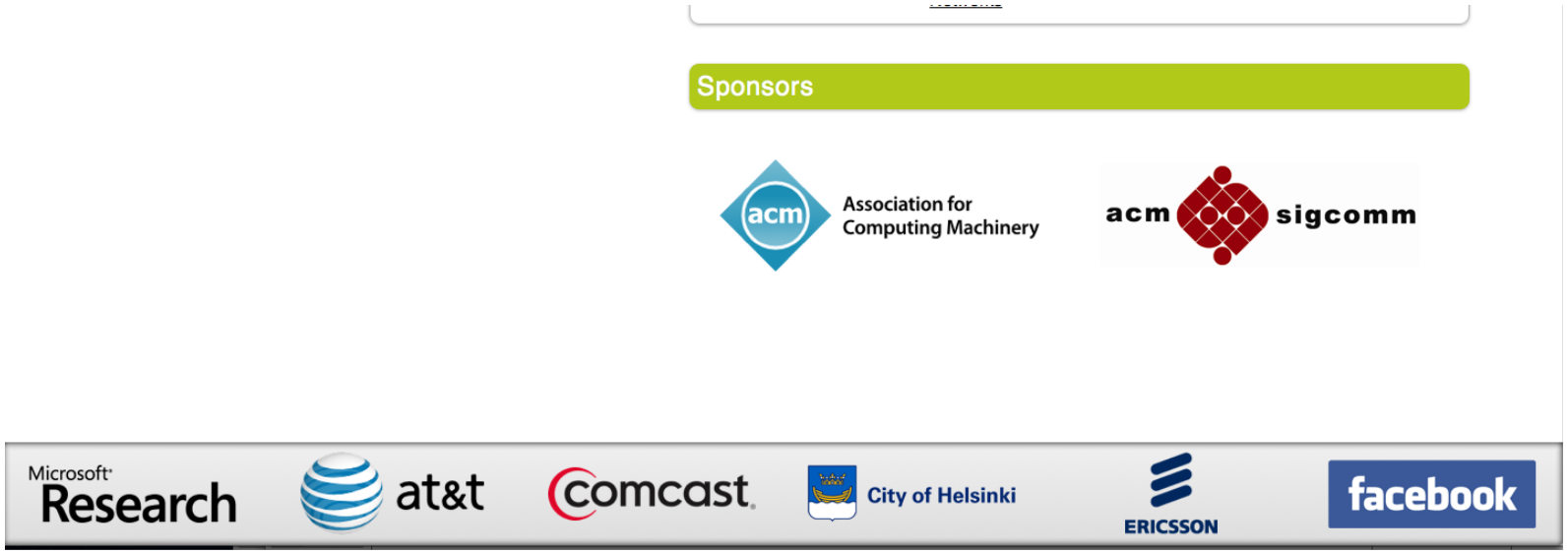
- Develop a **complete** and **novel** problem statement
- Identify all **alternatives** to solve your problem
- Find what you will get at the end (**ask questions** that would be replied)
- **Evaluate** all alternatives and find the best solution
- **Present your work to others**

Where Can We Present Our Results?

- **Conference or Workshop Papers**
  - Affiliation
  - Conference Quality and Ranking
  - TPC members
- **Journal Papers**
  - Impact Factor
  - Editors
- **Oral Presentations and Discussions**

Case Study: Create-Net

Case Study: SIGComm



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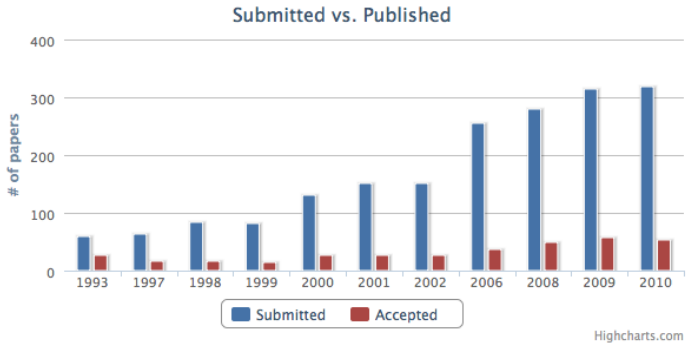
Conference Ranking and Quality

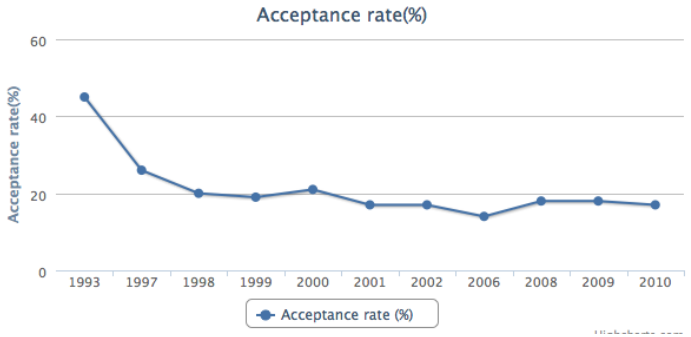
Computer Science Conferences - Acceptance Rates, Statistics

Choose a conference to see the statistics in visual form

Leave your comments and suggestions on my blog.

CCS





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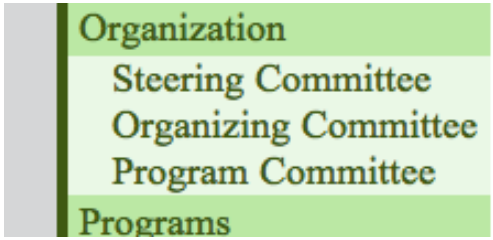
Organization

1. Steering Committee
2. Organizing Committee
3. Program Committee



Organizing Committee

Organizing Committee

General Co-Chairs:	Özgür B. Akan (Koc University, Turkey) Eylem Ekici (The Ohio State University, USA)
Program Co-Chairs:	Lili Qiu (University of Texas at Austin, USA) Alex C. Snoeren (University of California, San Diego, USA)
Finance Chair:	Tracy Camp (Colorado School of Mines, USA)
Registration Chair:	Mehmet Can Vuran (University of Nebraska-Lincoln, USA)
Local Arrangements Co-Chairs:	Tuna Tugcu (Bogazici University, Turkey) Berk Canberk (Istanbul Technical University, Turkey)
Web and Publicity Co-Chairs:	Giovanni Pau (University of California, Los Angeles, USA) Jiang (Linda) Xie (University of North Carolina at Charlotte, USA)
Workshops Chair:	Tommaso Melodia (State University of New York (SUNY) at Buffalo, USA)
Student Grants & SRC Co-Chairs:	Wenye Wang (North Carolina State University, USA) Matteo Cesana (Politecnico di Milano, Italy)
Demos, Posters, and Panels Chair:	Falko Dressler (University of Innsbruck, Austria)
Steering Committee:	Victor Bahl (Microsoft Research, USA) David B. Johnson (Rice University, USA)

Present your Results!

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Journal Impact Factors: *Why?* Where? What?

Why?

- Evaluate the scholarly worth of a journal
  - Often touted and tracked by publishers
    e.g., *WHO bulletin*; *BMC*
- Rank journals within a discipline
- Help you decide where to publish your article for maximum impact
- Evaluation for promotion / tenure / grants, or in some countries, even government funding of an institution
- Frequently used as an evaluation source by librarians during journal cancellations or new purchases

- In **England**, hiring panels routinely consider impact factors
- By **Spanish law**, researchers are rewarded for publishing in journals defined by ISI as prestigious (upper third of impact factor listings)
- In **China**, scientists get cash bonuses for publishing in high-impact journals. In some schools, physics students must publish at least 2 articles with a combined Impact Factor of 4 to get their PhD

From the *Chronicle of Higher Education (2005)* "The Number that is **Devouring** Science"

Journal Impact Factors: Why? *Where?* What?

Where do we find Impact Factors?

Impact factors are listed in *Journal Citation Reports (JCR)*

– You can get to the *JCR* from the *Web of Science*

THOMSON REUTERS

Web of Science®

Thomson Reuters (formerly ISI) has one, huge database, Web of Science, that…

- **Indexes selected journals**

  > 8,000 science; > 3,000 social science journals;
  > 1,800 Arts & Humanities

- **Tracks "cited references" and "times cited"**
  - Sample topic/author search: "impact factor*" and Garfield E*
- *Activity: Search for an article in your field that has been highly cited.*
  - Then, from a Full Record, look for "Additional Information" and click through to view the journal's impact factor in the JCR.

2010 Journal Citation Reports

Subject: Biochem & Molecular Biology
Sorted by Impact Factor (2-year)

Rank	Abbreviated Journal Title (linked to journal information)	ISSN	JCR Data						*Eigenfactor*™ Metrics	
			Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-life	*Eigenfactor*™ Score	*Article Influence*™ Score
1	CELL	0092-8674	167591	32.406	34.931	6.661	319	8.5	0.70027	20.591
2	ANNU REV BIOCHEM	0066-4154	18621	29.742	34.471	5.464	28	>10.0	0.06103	20.037
3	NAT MED	1078-8956	53666	25.430	27.887	5.377	151	7.1	0.18060	12.479
4	NAT CHEM BIOL	1552-4450	6991	15.808	16.321	3.352	125	3.0	0.06019	7.718
5	MOL PSYCHIATR	1359-4184	11337	15.470	13.253	3.248	101	5.1	0.04398	4.772
6	MOL CELL	1097-2765	42991	14.194	14.447	3.010	304	5.7	0.26290	8.933
7	NAT STRUCT MOL BIOL	1545-9985	21255	13.685	12.481	2.967	212	5.9	0.12645	8.037
8	GENOME RES	1088-9051	24166	13.588	11.971	3.176	170	5.8	0.12588	6.568
9	PLOS BIOL	1544-9173	18454	12.472	14.376	2.706	214	4.1	0.15993	8.211
10	MOL ASPECTS MED	0098-2997	2416	10.552	10.546	1.088	34	4.7	0.00889	3.250
11	TRENDS BIOCHEM SCI	0968-0004	14872	10.364	12.702	1.845	84	8.5	0.04781	6.502
12	TRENDS MOL MED	1471-4914	5365	10.308	9.187	1.377	61	4.8	0.02370	3.365
13	REV PHYSIOL BIOCH P	0303-4240	965	10.200	4.610			7.8	0.00152	1.905
14	CRIT REV BIOCHEM MOL	1040-9238	2538	10.125	10.253	1.323	31	8.2	0.01053	5.965
15	EMBO J	0261-4189	76014	10.124	9.369	2.267	329	9.7	0.20632	5.299

Journal Impact Factors:
Why? Where? *What?*

- What is the Journal Impact Factor?
- **How is it calculated?**

E.g., the 2009 Impact factor for the journal *Cell* =

$$\frac{\text{Number of times articles or other items published in } \textit{Cell} \text{ during 2007 \& 2008 were cited in indexed journals* during 2009}}{\text{Number of ``citable'' articles** published in } \textit{Cell} \text{ in 2007 \& 2008}}$$

~~~~~~*

Only references in articles within the ~13,000 journals indexed in *Web of Science* are counted; does not include citations that may cite the articles in *Cell* from book chapters, proceedings, or other journals that are not indexed in *Web of Science*

** Citable articles are just research articles and reviews – not news articles, commentary, etc.
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Journal Impact Factors:
Why? Where? *What?*

Calculating the 2009 Journal Impact factor for the journal *Cell* =

Number of times articles or other items published in *Cell* during
2007-2008 were cited in indexed journals during 2009
———————————————————————————————

Number of "citable" articles published in *Cell* in 2008 and 2007

That is:

Cites in 2009 to items published in 2008 + 2007 = 9533 + 12554 = 22087

Number of items published in *Cell in* 2008 + 2007 = 343 + 366 = 709

Impact = Cites to recent items ……. 22087 = **31.152**

Factor Number of recent items published……. 709

Criticisms of Journal Impact Factors...

- Only a limited subset of journals is indexed by ISI
  - Only uses the articles cited by the ~13,000 "ISI journals"
  - Some disciplines are especially poorly covered
- Biased toward English-language journals
  - ISI has recently added several hundred non-English journals
- Short (two years) snapshot of journal
  - Some disciplines use older material more or take time to cite new research
  - *JCR* now also includes the 5-year data
- Is an average; not all articles are equally well-cited

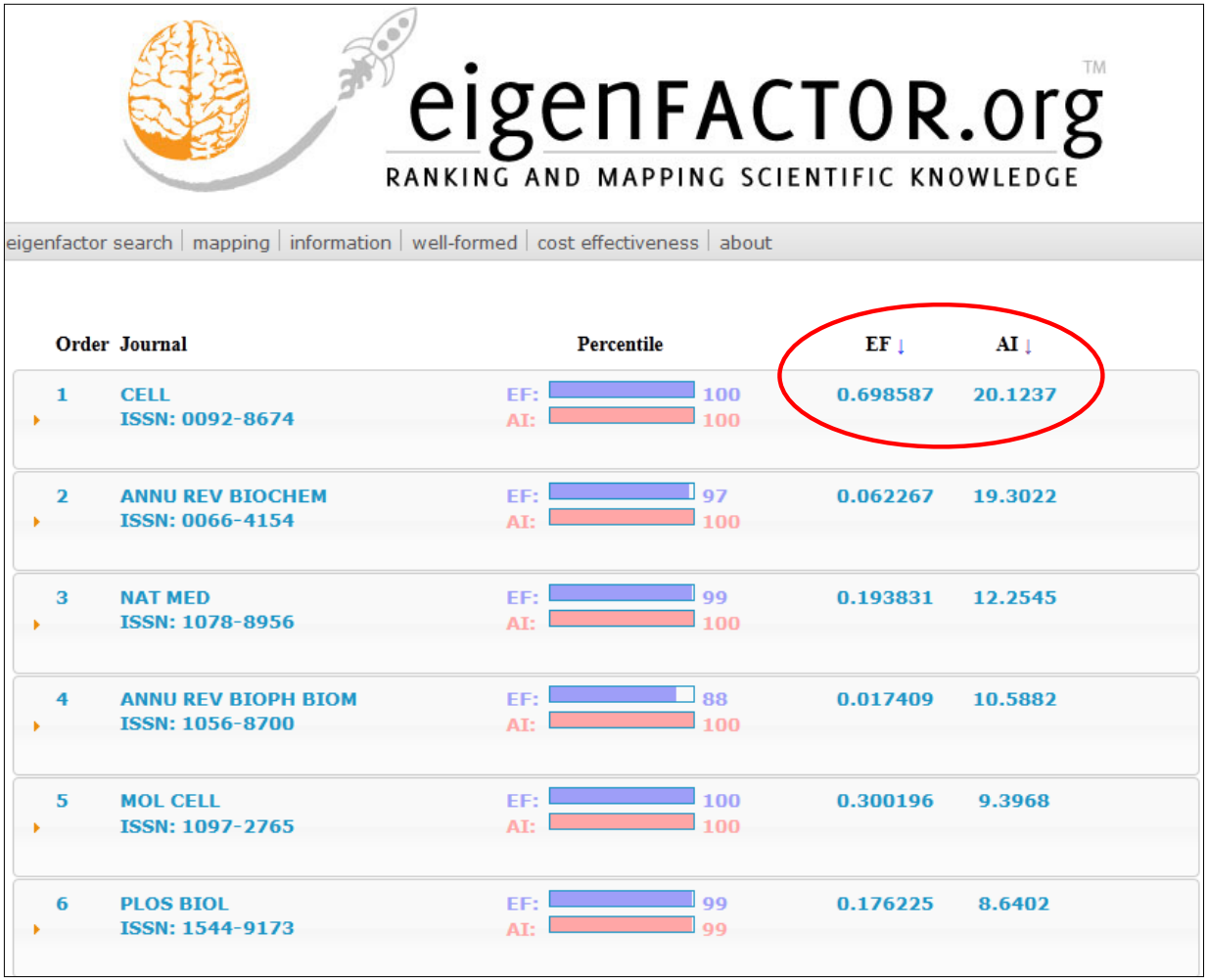
Criticisms of Journal Impact Factors…

- Includes **self-citations**, that is articles in which the article cites other papers in the same journal
- Only includes "citable" articles in the denominator of the equation, i.e., articles and reviews
  - Editors may skew IF by increasing the number of review articles, which bring in more citations (increases the numerator)
  - Or by increasing the number of "news" items (e.g., *Science*, general medical journals) , which are cited (appear in numerator) but not considered "citable" (and so are not in the denominator)
- It is expensive to subscribe to the *JCR*

Other Journal Ranking Efforts…

- Available free at eigenfactor.org (1995-2009 data)
- As with the *JCR*, only ISI journals are ranked
- Uses "all" ISI data, analyzed differently.
  - all cited and citing references (so includes citations from non-ISI journals, books, dissertations, etc.)
- Uses similar algorithm as Google's PageRank
  - By this approach, journals are considered to be influential if they are cited often by other influential journals.
- Looks at five years of data
- As of 2007, also available within *JCR*!

Biochem & Molecular Biology Subject Category…



eigenFACTOR.org™
RANKING AND MAPPING SCIENTIFIC KNOWLEDGE

eigenfactor search | mapping | information | well-formed | cost effectiveness | about

Order	Journal	Percentile	EF ↓	AI ↓
1	CELL ISSN: 0092-8674	EF: 100 AI: 100	0.698587	20.1237
2	ANNU REV BIOCHEM ISSN: 0066-4154	EF: 97 AI: 100	0.062267	19.3022
3	NAT MED ISSN: 1078-8956	EF: 99 AI: 100	0.193831	12.2545
4	ANNU REV BIOPH BIOM ISSN: 1056-8700	EF: 88 AI: 100	0.017409	10.5882
5	MOL CELL ISSN: 1097-2765	EF: 100 AI: 100	0.300196	9.3968
6	PLOS BIOL ISSN: 1544-9173	EF: 99 AI: 99	0.176225	8.6402

Eigenfactor.org Scores

- **Eigenfactor Score: … the higher the better**
  - For a journal, the number of times articles published in the previous *five years* have been cited in the current year. It also considers which journals have contributed these citations so that *highly cited journals will influence the score more than lesser cited journals* (similar to the Google pagerank algorithim). Self citations are removed.
  - *A measure of the journal's total importance to the scientific community.*
  - Eigenfactor scores are scaled so that the sum of the Eigenfactor scores of all journals listed in Thomson's *Journal Citation Reports (JCR)* is 100.
- **Article Influence Score: … the higher the better**
  - The average influence, per article, of the papers in a journal. *As such, it is comparable to the* ***Journal Impact Factor****.*
  - Article Influence scores are normalized so that the *mean article in the entire Thomson Journal Citation Reports (JCR) database has an article influence of 1.00*. A score greater than 1.00 indicates that each article in the journal has above-average influence.
  - Still, as with IFs, it's best to "compare" within subjects.
- **Cost Effectiveness: … the lower the better**
  - Annual Price / Eigenfactor Score

Comparing *JCR* and *Eigenfactor*

For *JCR* Category "Cell Biology" (2008) --
the top six journals sorted by Journal Impact Factor

	5-year JCR Impact Factor	Eigenfactor Article Influence Score
Nature Rev Molec Cell Biol	35.423 (100)*	19.970 (100)
Cell	31.253 (88)	18.871(94)
Nature Medicine	27.553(78)	12.958(65)
Ann Rev Cell Biology	22.731(64)	16.220(81)
Nature Cell Biology	17.774(50)	10.872(54)
Cell Stem Cell	16.826(48)	12.304(62)
Cell Metabolism	16.107(45)	9.506(48)

*In parenthesis, values normalized.

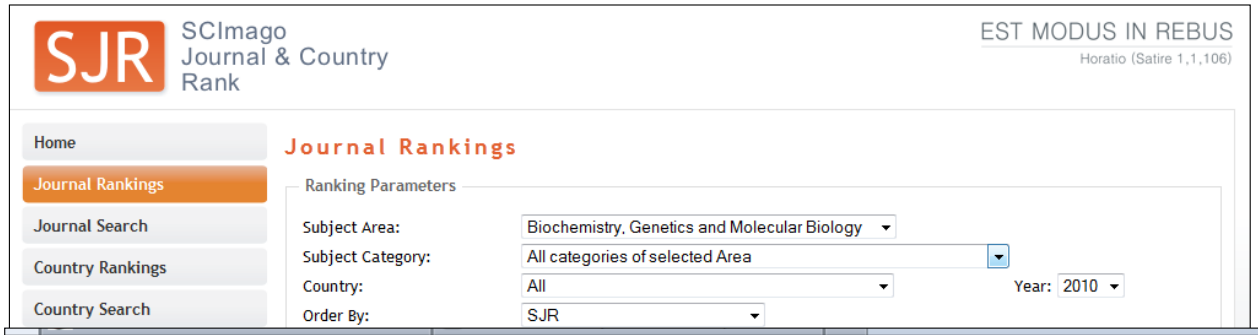
Another Journal Ranking Effort...

SJR SCImago Journal & Country Rank

SCImago Journal Rank (SJR)

- The citation PageRank of a journal calculated on the basis of the *Scopus* citation data divided by the number of articles published by the journal over 3 years.
- Similar to Eigenfactor methods, but based on citations in ***Scopus*** instead of ***Web of Science***.
  - Freely available at scimagojr.com
  - Covers more journals (~20,000) than JCR because *Scopus* covers more journals than *Web of Science*
  - More international diversity
  - 3 years of citations; no self-citations

SCImago scimagojr.com



How to cite this website?

SJR is developed by:

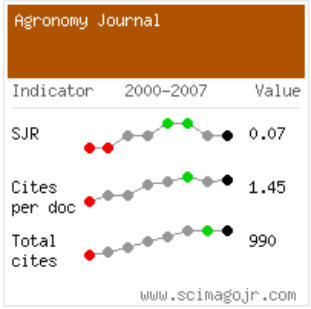
SCIMAGO LAB

Powered by SCOPUS™

	Title	SJR	H index	Total Docs. (2010)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	Country
1	Annual Review of Immunology	17,588	199	22	75	4.199	3.630	74	51,23	190,86	
2	Nature Genetics	14,417	346	277	939	6.420	22.281	651	34,74	23,18	
3	Cell	12,666	475	488	1.649	18.987	35.194	1.037	32,37	38,91	
4	Ca-A Cancer Journal for Clinicians	11,903	80	38	114	2.410	5.264	63	101,36	63,42	
5	Immunity	10,337	234	205	634	9.247	10.323	440	24,43	45,11	
6	Annual Review of Biochemistry	9,570	185	28	99	4.477	3.109	99	28,80	159,89	
7	Cancer Cell	8,759	155	157	394	5.117	6.597	234	27,05	32,59	
8	Nature	8,536	678	2.475	7.054	36.239	92.921	2.940	32,29	14,64	
9	Ageing Research Reviews	7,958	47	62	77	6.601	588	1	0,00	106,47	
10	Nature Immunology	7,763	212	215	705	7.696	10.489	565	17,92	35,80	
11	Cell Stem Cell	7,377	59	196	473	5.881	6.326	260	24,02	30,01	
12	Annual Review of Genetics	7,090	110	19	76	2.714	1.449	76	20,56	142,84	

SCImago Journal Search (*Agronomy Journal*)

Show this information in your website



Display journal title

Embed this in your html code:

<a href="http://www.scimagoji

How to cite this website?

SJR is developed by:

SCIMAGO

Coverage: 1976-1985

ISSN: 00021962, 14350645

H Index: 41

Indicators	1999	2000	2001	2002	2003	2004	2005	2006	2007
SJR	0,076	0,061	0,061	0,072	0,071	0,079	0,078	0,069	0,068
Total Documents	142	179	190	172	187	211	204	199	210
Total Docs. (3years)	398	392	431	511	541	549	570	602	614
Total References	3.594	4.767	5.132	5.358	5.846	6.572	6.344	7.117	7.059
Total Cites (3years)	416	326	403	516	708	811	1.019	1.026	990
Self Cites (3years)	68	74	91	116	143	227	235	211	236
Citable Docs. (3years)	391	389	425	501	526	535	560	594	604
Cites / Doc. (4years)	1,06	1,00	1,11	1,06	1,39	1,55	1,95	1,95	1,78
Cites / Doc. (3years)	1,06	0,84	0,95	1,03	1,35	1,52	1,82	1,73	1,64
Cites / Doc. (2years)	0,81	0,69	0,88	0,88	1,29	1,36	1,57	1,39	1,45
References / Doc.	25,31	26,63	27,01	31,15	31,26	31,15	31,10	35,76	33,61
Cited Docs.	205	189	219	274	304	334	373	407	407
Uncited Docs.	193	203	212	237	237	215	197	195	207
% International Collaboration	16,20	13,97	0,00	1,74	17,11	14,69	17,65	14,07	14,29

An aside…The SCImago Institutions Rankings Report (SIR)

Institutions are also interested in seeing how they are doing!

Download this free report (2011) at: www.scimagojr.com/

- Ranks 3,042 institutions, worldwide
- Provides 5 indicators of research performance, stressing research output, citations, international collaboration and impact.
- Data comes from the *Scopus* db (analyzed 18,750 research publications, mostly journals and proceedings)
- Data is from 2005-2009

Research Output: 1-Chinese Acad; 2-CNRS (France); 3-Russian Acad Sci; 4-Harvard; 5-Max Planck; 6-Tokyo; 7-NIH; 8-Toronto; 10-Johns Hopkins; 12-Mich; 17-UCLA; 19-Stanford; 24-Berkeley; 30-Wisconsin-Madison; 37-USDA; 40-MIT; 41-Cornell; 42-U of Illinois; 46-Yale; 65-Northwestern; 69-Purdue; 76-NASA.

IEEE Transactions on Computational Social Systems

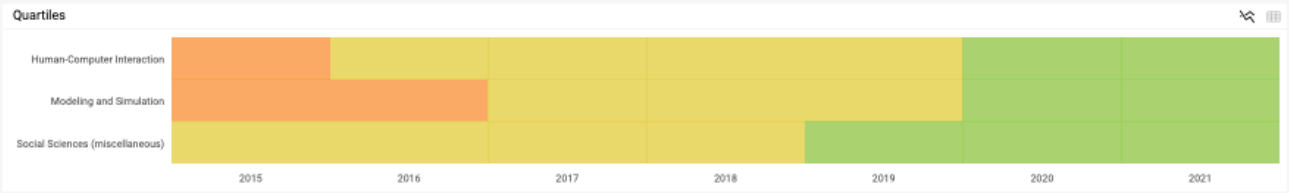
COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
United States Universities and research institutions in United States	Computer Science Human-Computer Interaction Mathematics Modeling and Simulation Social Sciences Social Sciences (miscellaneous)	IEEE Systems, Man, and Cybernetics Society Institute of Electrical and Electronics Engineers, USA in Scimago Institutions Rankings	33

PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Journals	2329924X	2014-2021	Homepage How to publish in this journal Contact

SCOPE

IEEE Transactions on Computational Social Systems focuses on such topics as modeling, simulation, analysis and understanding of social systems from the quantitative and/or computational perspective. "Systems" include man-man, man-machine and machine-machine organizations and adversarial situations as well as social media structures and their dynamics. More specifically, the proposed transactions publishes articles on modeling the dynamics of social systems, methodologies for incorporating and representing socio-cultural and behavioral aspects in computational modeling, analysis of social system behavior and structure, and paradigms for social systems modeling and simulation. The journal also features articles on social network dynamics, social intelligence and cognition, social systems design and architectures, socio-cultural modeling and representation, and computational behavior modeling, and their applications.

Join the conversation about this journal



Comparison of Three Journal Ranking Systems … Higher is "better" in all cases (2007)

Journal	JCR Journal Impact Factor (2 year)	JCR Journal Impact Factor (5 year)	Eigenfactor Article Influence Score (5 year)	SCImago Journal Rank (3 year)
Science	26.372	30.631	16.539	3.726
Cell	29.887	28.779	18.188	10.735
Nature	28.751	28.751	16.996	4.636
PNAS	9.598	10.369	4.929	2.689
BMC Bioinformatics	3.493	4.221	1.608	.750
Bioinformatics	5.039	6.649	2.406	1.225

•**SJR** from SCImago are based on the *Scopus* database, not the *Web of Science* database; both **JCR** and **Eigenfactors** are calculated from the Web of Science database.

What happens afterward!

CHECK THE QUALITY OF YOUR WORK

Measure your quality!

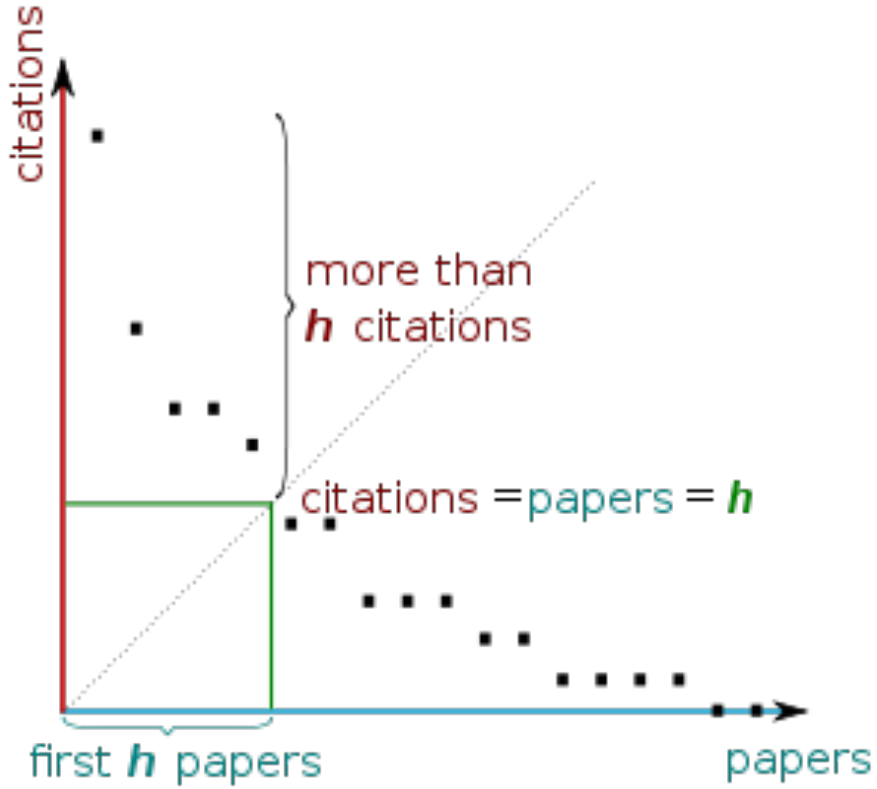
H-INDEX

h-Index Definition

- An index that quantifies both the actual scientific **productivity** and the apparent scientific **impact** of a scientist

- Example: A scholar with an index of 10 means that the scholar has published 10 papers each of which has been cited by others at least 10 times

h-Index


citations
more than
h citations
citations = papers = h
first h papers
papers

What is the h-index?

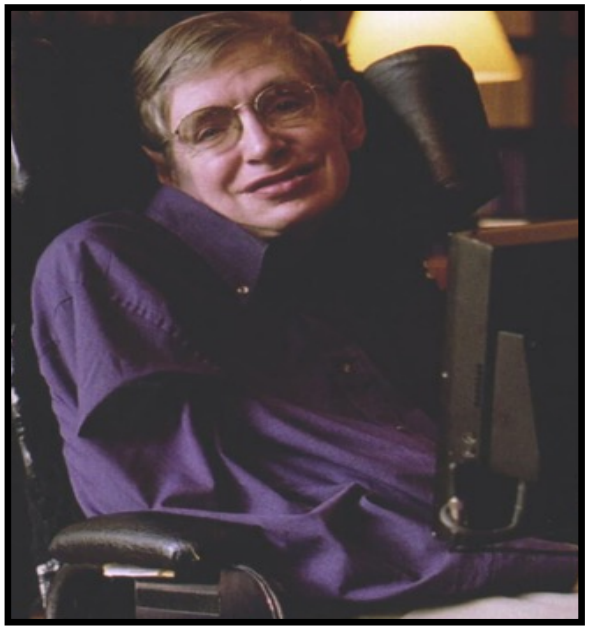
- A single number representing the scholarly output of a researcher
- Proposed in **2005 by J.E. Hirsch of UC San Diego**
- Less easily skewed than other measures
- Also used to rank research topics, institutions/ departments, journals

But!

My h-index is bigger than yours!

But more people know who I am!

Edward Witten
Physicist
h=132



Stephen Hawking
Physicist
h=62

Criticism

- The *h*-index does not account for the **typical number of citations in different fields.**

- The *h*-index discards the information contained in **author placement in the authors' list**, which in some scientific fields is significant.

Criticism

- The *h*-index **is bounded by the total number of publications**. This means that scientists with a short career are at an inherent disadvantage, regardless of the importance of their discoveries. For example,
  Had Albert Einstein died after publishing his four groundbreaking Annus Mirabilis papers in 1905, his h-index would be stuck at 4 or 5.

Criticism

- The *h*-index does not account for the **number of authors** of a paper.

- The *h*-index does not consider the **context of citations**.

- The h-index **gives books the same count** as articles making it difficult to compare scholars in fields that are more book-oriented such as the humanities.

Criticism

- The h-index is **a natural number** which reduces its discriminatory power. Ruane and Tol therefore propose a rational h-index that interpolates between h and h + 1.

- The h-**index can be manipulated through self-citations,** and if based on Google Scholar output, then even computer-generated documents can be used for that purpose, e.g. using SCIgen.

H-index: Example

Herbert Simon

Professor of Computer Science, Carnegie Mellon
Artificial intelligence - Cognitive psychology - Bounded rationality
No verified email
Homepage

Google scholar

Search Authors

My Citations - Help

Follow this author

6 Followers

Follow new articles
Follow new citations

Co-authors

Allen Newell
K Anders Ericsson
Fernand Gobet
John R Anderson
Massimo Egidi
Marek J. Druzdzel
Judea Pearl
John McCarthy
Bruce Buchanan
Dan(a) Zhu
Kurt VanLehn
Thad Polk
Robert F. Murphy

View all co-authors

Citation indices

	All	Since 2008
Citations	194673	57263
h-index	146	83
i10-index	512	293

Citations to my articles

Select: All, None Export Show: 20 1-20 Next >

Title / Author	Cited by	Year
Organizations JG March, HA Simon New York	16347 *	1975
Administrative behavior HA Simon Free Press	16013	1957
The Sciences of the Articicial HA Simon Cambridge, MA: MIT Press	14210	1981
Human problem solving: The state of the theory in 1970. HA Simon, A Newell American Psychologist; American Psychologist 26 (2), 145	12517 *	1971
Protocol Analysis. Verbal reports as data KA Ericsson, H Simon	9845 *	1993
A behavioral model of rational choice HA Simon The quarterly journal of economics 69 (1), 99-118	8145	1955
Models of man: Social and Rational HA SIMÓN N. York, J. Wiley	7054	1957

World	National	Scholar	D-Index	Citations	Publications
1	1	 **Anil K. Jain** Michigan State University, United States	203	250,990	970
2	1	 **Yoshua Bengio** University of Montreal, Canada	200	491,250	909
3	2	 **Jiawei Han** University of Illinois at Urbana-Champaign, United States	186	209,445	1,177
4	3	 **Michael I. Jordan** University of California, Berkeley, United States	176	220,056	776
5	1	 **Andrew Zisserman** University of Oxford, United Kingdom	175	255,987	698
6	4	 **Philip S. Yu** University of Illinois at Chicago, United States	166	131,899	1,814
7	5	 **Thomas S. Huang** University of Illinois at Urbana-Champaign, United States	165	122,431	1,329
8	6	 **Takeo Kanade** Carnegie Mellon University, United States	161	125,670	751
9	1	 **Francisco Herrera** University of Granada, Spain	161	111,307	1,008
10	1	 **Wil M. P. van der Aalst** RWTH Aachen University, Germany	157	118,010	1,038
11	1	 **Rajkumar Buyya** University of Melbourne, Australia	156	121,353	1,058

Erdos Number

Co-author	Number of collaborations
András Sárközy	62
András Hajnal	56
Ralph Faudree	50
Richard Schelp	42
Cecil C. Rousseau	35
Vera T. Sós	35
Alfréd Rényi	32
Pál Turán	30
Endre Szemerédi	29
Ronald Graham	28

Other Metrics

- An **individual h-index** normalized by the average number of co-authors in the h-core
- The **m-index** is defined as h/n, where n is the number of years since the first published paper of the scientist
- The **c-index** accounts not only for the citations but for the quality of the citations in terms of the collaboration distance between citing and cited authors.
- Because the *h*-index was never meant to measure future publication success, recently, a group of researchers has investigated the features that are most predictive of future *h*-index (Nature article). It is possible to try the **predictions** using an online tool.