

Research Publications and Presentations

Mohammad Hossein Manshaei

manshaei@gmail.com



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

Sponsors

Association for Computing Machinery

acm sigcomm













Present your Results!

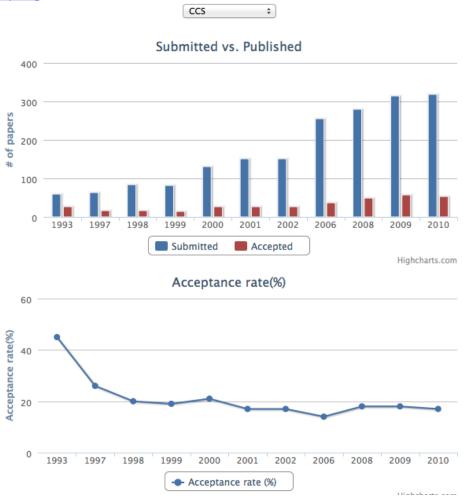
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Conference Ranking and Quality

Computer Science Conferences - Acceptance Rates, Statistics

Choose a conference to see the statistics in visual form

Leave your comments and suggestions on my blog.



Present your Results!

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Organization

- I. Steering Committee
- 2. Organizing Committee
- 3. Program Committee

Organization

Steering Committee Organizing Committee Program Committee

Programs

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)

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Berk Canberk (Istanbul Technical University, Turkey)

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Jiang (Linda) Xie (University of North Carolina at Charlotte, USA)

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Matteo Cesana (Politecnico di Milano, Italy)

Demos, Posters, and Panels Chair: Falko Dressler (University of Innsbruck, Austria)

Steering Committee: Victor Bahl (Microsoft Research, USA)

<u>David B. Johnson</u> (Rice University, USA)

Present your Results!

- Conference or Workshop Papers
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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., <u>WHO bulletin</u>; <u>BMC</u>
- 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



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)

EigenfactorTM Metrics i) JCR Data (i) Abbreviated Journal Title Article 5-Year (linked to journal **ISSN** Rank Cited EigenfactorTM Total **Impact** Immediacy Articles InfluenceTM **Impact** information) Cites Index Half-life Factor Score Factor Score 0092-8674 167591 32.406 34.931 8.5 0.70027 CELL 6.661 319 20.591 1 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 25.430 27.887 7.1 12.479 53666 5.377 151 0.18060 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 12.481 212 5.9 2.967 0.12645 8.037 8 24166 13.588 11.971 170 5.8 GENOME RES 1088-9051 3.176 0.12588 6.568 9 PLOS BIOL 1544-9173 18454 12.472 14.376 2.706 4.1 0.15993 214 8.211 MOL ASPECTS MED 0098-2997 2416 10.552 10.546 1.088 34 4.7 0.00889 3.250 10 14872 10.364 12.702 8.5 11 TRENDS BIOCHEM SCI 0968-0004 1.845 84 0.04781 6.502 12 TRENDS MOL MED 1471-4914 5365 10.308 9.187 1.377 4.8 0.02370 3.365 61 REV PHYSIOL BIOCH P 13 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

9.369

2.267

329

9.7

0.20632

5.299

15

EMBO J

0261-4189

76014 10.124

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 =

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 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.

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 = 22087Number of items published in *Cell in* 2008 + 2007 = 343 + 366 = 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...

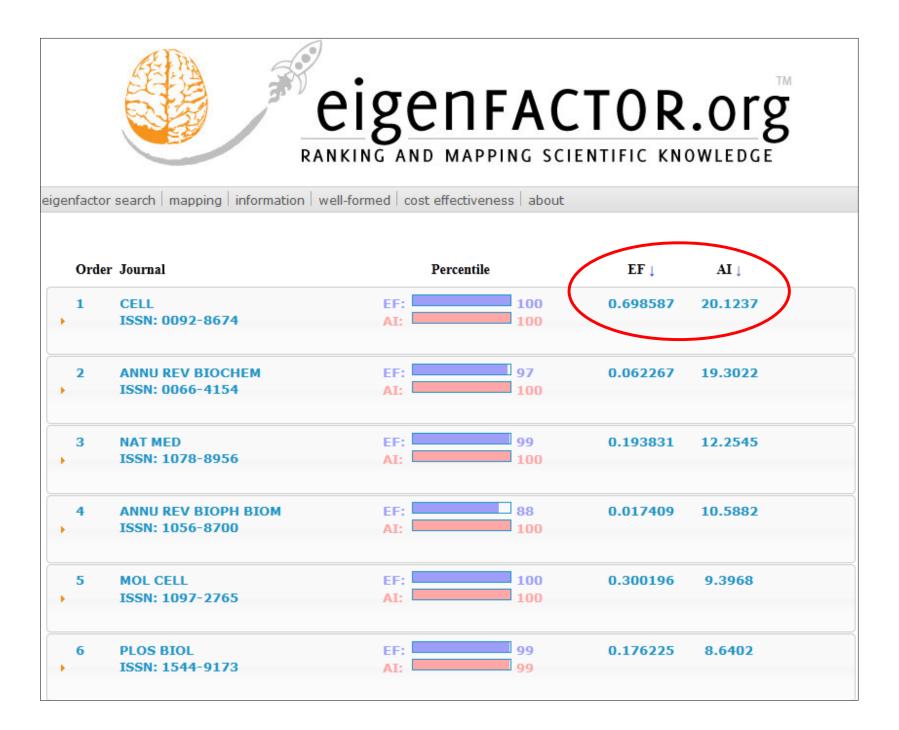
- Includes self-citations, that is articles in which the article cites other papers in the same journal
- Only includes "citable" articles in the denominator of the equation, i.e., articles and reviews
 - Editors may skew IF by increasing the number of review articles, which bring in more citations (increases 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 <u>eigenfactor.org</u> (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 ICR!

Biochem & Molecular Biology Subject Category...



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.

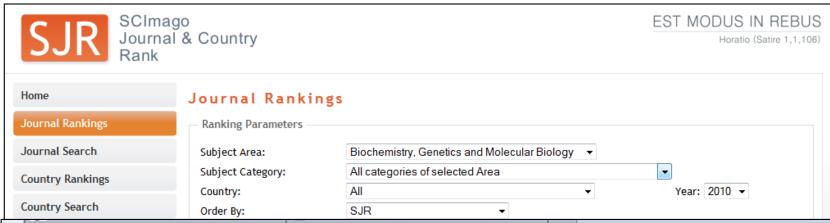
Another Journal Ranking Effort...



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 <u>Scopus</u> instead of **Web of Science**.
 - Freely available at <u>scimagojr.com</u>
 - 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



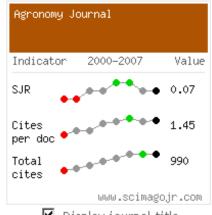
? How to cite this website?
SJR is developed by:
SCIMAGO



	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	107 FG 508 209
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	WALL
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	WX
8	Nature	8,536	678	2.475	7.054	36.239	92.921	2.940	32,29	14,64	100 TO 201 ES
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	100 TG 201 ES
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:

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)

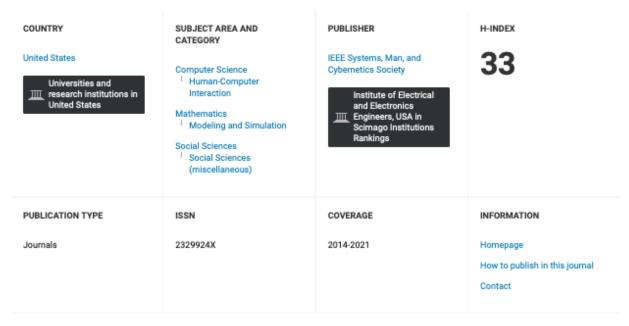
Institutions are also interested in seeing how they are doing!

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: I-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.

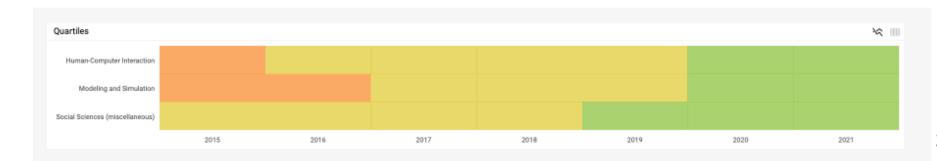
IEEE Transactions on Computational Social Systems



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.

Q 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!

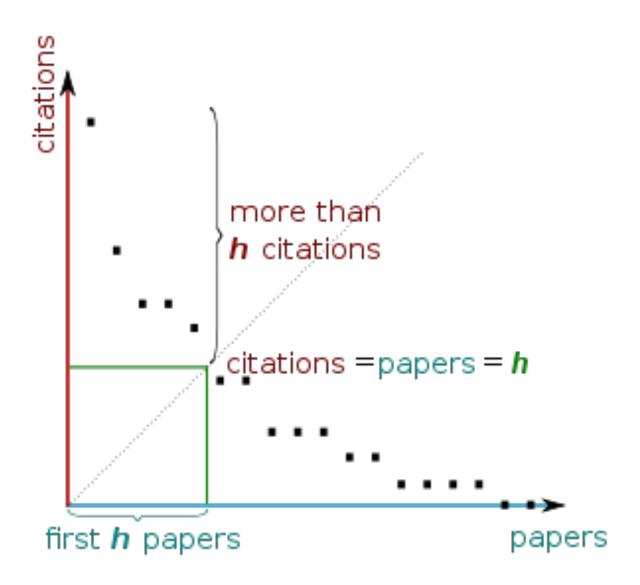


h-Index Definition

 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



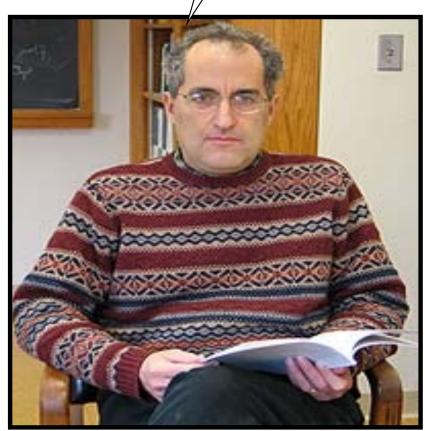
What is the h-index?

- 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

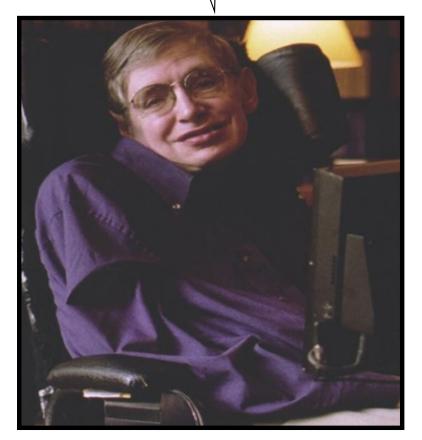


My h-index is bigger than yours!

But more people know who I am!



Edward Witten Physicist h=132



Stephen Hawking Physicist h=62

 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.

• 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 hindex would be stuck at 4 or 5.

- 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.

• 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.

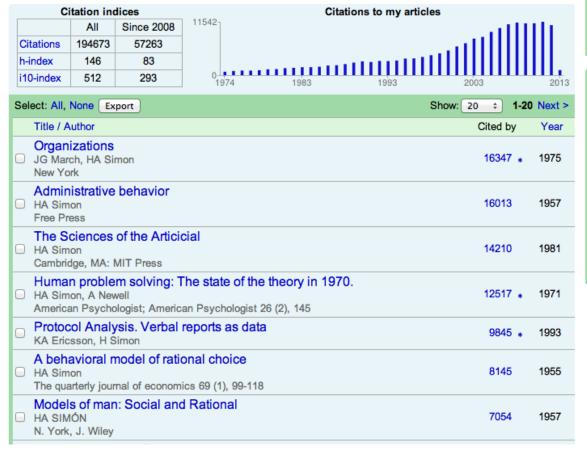
• The h-index can be manipulated through self-citations, and if based on Google Scholar output, then even computer-generated documents can be used for that purpose, e.g. using SClgen.

H-index: Example



Herbert Simon

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





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

Highest in Computer Science

200 Anil K. Jain (Michigan State U), ACM Fellow, IEEE Fellow, IEEE Technical Achievement Award, Member of the National Academy of Engineering

187 Michael I. Jordan (Berkeley), ACM Fellow, IEEE Fellow, AAAS Fellow, Member of the National Academy of Engineering, Member of the National Academy of Sciences, Member of the American Academy of Arts & Sciences, SIAM Fellow

- 187 Herbert A. Simon (CMU), Nobel Laureate, Turing Award, ACM Fellow
- 185 Jiawei Han (UIUC), ACM Fellow, IEEE Technical Achievement Award
- 175 Philip S. Yu (UIC), ACM Fellow, IEEE Fellow, IEEE Technical Achievement Award
- 171 Andrew Zisserman (University of Oxford), Fellow of the Royal Society
- 169 Terrence Sejnowski (UCSD), IEEE Fellow, Member of the National Academy of Engineering, Member of the National Academy of Sciences, Member of the Institute of Medicine, IEEE Frank Rosenblat Award
- 168 Thomas S. Huang (UIUC), IEEE Fellow, Member of the National Academy of Engineering
- 163 Wil van der Aalst (RWTH Aachen University), ACM Fellow, IEEE Fellow, IFIP Fellow, Member of Academy of Europe (Academia Europaea), Member of the Royal Netherlands Academy of Arts and Sciences, Member of the Royal Holland Society of Sciences and Humanities
- 157 Sebastian Thrun (Stanford), Member of the National Academy of Engineering
- 152 Steven Salzberg (Johns Hopkins U), ACM Fellow, AAAS Fellow, ISCB Fellow, Member of the American Academy of Arts and Sciences
- 150 Rajkumar Buyya (University of Melbourne, Australia), IEEE Fellow, IEEE Medal for Excellence in Scalable Computing
- 129 Bernhard Schölkopf (Max Planck), ACM Fellow, Member of the National Academy of Sciences Leopoldina in Germany
- 126 Jack Dongarra (U Tennessee), ACM Fellow, IEEE Fellow, Member of the National Academy of Engineering, SIAM Fellow, AAAS Fellow, Foreign Member of the Russian Academy of Science
- 126 Takeo Kanade (CMU), ACM Fellow, IEEE Fellow, Member of the National Academy of Engineering
- 126 Yann LeCun (NYU)
- 126 Scott Shenker (Berkeley), ACM Fellow, IEEE Fellow, Member of the National Academy of Engineering
- 124 David Haussler (UC Santa Cruz), ISCB Fellow
- 124 Athanasios Vasilakos (Lulea U of Technology, Sweden)
- 122 Geoffrey E. Hinton (U Toronto), Fellow of the Royal Society, Member of the American Academy of Arts & Sciences, Fellow of the Royal Society, FRSC, IEEE Frank Rosenblatt Award
- 120 Deborah Estrin (Cornell NYC Tech), ACM Fellow, IEEE Fellow, Member of the National Academy of Engineering
- 118 Hector Garcia-Molina (Stanford), ACM Fellow, Member of the National Academy of Engineering
- 115 Martin Vetterli (EPFL), ACM Fellow, IEEE Fellow, Member of the National Academy of Engineering
- 115 Hong Jiang Zhang (Sourcecode Capital, China), ACM Fellow, IEEE Fellow, ACM SIGMM Technical Achievement Award, IEEE Technical Achievement Award
- 114 Vipin Kumar (U Minnesota), ACM Fellow, IEEE Fellow, IEEE Technical Achievement Award
- 113 Don Towsley (U Mass, Amherst), ACM Fellow, IEEE Fellow
- 112 Shankar Sastry (Berkeley)
- 111 Tomaso Poggio (MIT)
- 110 Gene H. Golub (Stanford)
- 110 Thomas A. Henzinger (IST Austria), ACM Fellow, Member of Academy of Europe (Academia Europaea), AAAS Fellow

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.