INSTITUTIONAL INTERVIEWS - 2008

October 2008

PDF

The 20 Most-Cited Institutions in Computer Science, 1998-2008

Institution Feature

This month, ScienceWatch.com *presents a listing of the top 20 institutions which, as of the third bimonthly update of* Essential Science Indicators℠ *(January 1, 1998-June 30, 2008) attracted the highest total citations to their papers published in Thomson Reuters-indexed Computer Science journals. These institutions are the top 20 out of a pool of 321 institutions comprising the top 1% ranked by total citation count in this field.*

The Computer Science field includes journals that cover the following specific areas of study:

- computer hardware and architecture
- computer software
- software engineering and design
- computer graphics
- programming languages
- theoretical computing
- computing methodologies
- broad computing topics
- interdisciplinary computer applications
- information systems and information technology
- acquisition, processing, storage, management, and dissemination of information
- communications via various devices and systems
- bioinformatics and biostatistics

The top 20 institutions in this field are overwhelmingly academic, although the top two slots have been claimed by industry. Seventeen of the institutions are US-based, two are in Europe, and one is in Asia. Of the 17 US-based institutions, four are in California and two are in Pennsylvania.

With a lead of over 3,000 citations, AT&T ranks at #1, based on 1,963 papers cited a total of 22,271 times. AT&T's most-cited papers in this field concentrate largely on wireless communications-related topics, such as space-time block coding, channel estimation, and capacity scaling.

The #2 slot belongs to the IBM Corporation, with 3,210 papers cited a total of 18,663 times. The most-cited paper for this institution reviews research progress in organic thin-film transistors. In our Special Topic on organic thin-film transistors, IBM researcher Dr. Christos Dimitrakopoulos was ranked as one of the top 10 scientists in this field. Other topics included in IBM's Highly Cited Papers in Computer Science include chip design, dielectrics, data storage, and web design.

The first academic institution on the list comes in at #3—it's MIT, with 2,105 papers cited a total of 16,079 times. The Broad Institute at MIT and Harvard's Haploview Team tops this institution's Highly Cited Papers, with 1,345 cites. The case of MIT demonstrates the particular influence of the journal *Bioinformatics*, which is currently included in the cohort of Computer Science journals. As a publisher of papers devoted to biology-related software and database tools, protein-structure determination, microarray analyses, and other bio-centric topics, *Bioinformatics* embodies the current interface between computer science and biomedical research, and also primarily accounts for the occasional allusions to genetics and other life sciences research in this discussion. A variety of other topics are included in MIT's research profile, such as the semantic web, microarray technologies, wireless networks, and digital watermarking and information embedding.

Hot on MIT's heels comes the first of the four California institutions—the University of California, Berkeley, with 1,734 papers cited a total of 16,028 times. In July 2004, we spoke with Ben Bolstad and his colleagues about their 2003 *Bioinformatics* paper, "A comparison of normalization methods for high density oligonucleotide array data based on variance and bias," (19: 185-93, 22 January 2003)—then, it was a New Hot Paper; now, it is Berkeley's most-cited paper in this field. Other papers from Berkeley garnering citation notice include such topics as global DNA sequencing tools, multielement antenna systems, and end-to-end congestion control on the internet.

Stanford University is the second California institution on the list, and it ranks at #5, with 1,773 papers cited a total of 15,458 times. Stanford's Highly Cited Papers in this field cover a wide variety of topics, including DNA microarrays, search engine designs, MIMO channels, cryptosystems, and security for digital data.

The University of Illinois ranks at #6, with 2,108 papers cited a total of 10,549 times. One of the university's top researchers in this field is P.R. Kumar, who has no less than four Highly Cited Papers in this listing. In our Special Topic on wireless/mobile networks, Dr. Kumar's work ranked at #3, and he ranks in the top 100 scientists in Computer Science overall. Other topics coming out of the University of Illinois include quality-of-service routing for networks, spatial multiplexing systems, and image retrieval.

The first of two Pennsylvania institutions is next: the Pennsylvania State University, with 880 papers cited a total of 10,182 times. Penn State's highly cited papers include the MEGA software for molecular evolutionary genetics analysis (a joint project with Arizona State University and Tokyo Metropolitan University), gene expression profile patterns, multiband artificial magnetic conductors, and the evaluation of hydrological and environmental models.

Another of the MEGA developers, Arizona State University, ranks at #8, with 595 papers cited a total of 9,149 times. Another gene-related project Arizona State University is involved in is the Comparative RNA Web (CRW) site. Other projects for this institution include antenna diversity, video tracing, and wireless relay channels.

The third California institution comes in at #9 with 1,230 papers cited a total of 9,099 times: the University of California, San Diego. the MrBayes 3 phylogenetic tool, public key encryption, predicting protein-protein interactions, and establishing a network weather service are among San Diego's Highly Cited Papers.

Rounding out the top 10 is the University of Uppsala in Sweden, with 439 papers cited a total of 7,832 times. Uppsala is also involved in the MrBayes program. They have also developed Xpose, a pharmacokinetic/pharmacodynamic model building aid. Other topics on Uppsala's list of Highly Cited Papers in this field include precoder/decoder designs for MIMO channels, space-time block codes, and psychological treatment via the internet.

The 10 remaining institutions on this list include one more from California (the University of California, Los Angeles at #15), one more from Pennsylvania (Carnegie Mellon University at #13), one from Japan (Tokyo Metropolitan University at #11), and one more from Europe (France's INRIA at #17).

Scientists from the remaining institutions in the top 20 who have spoken with us about their work include the University of Maryland's (#14) Rama Chellappa, Georgia Tech's (#16) Xiaoming Huo, and the University of Minnesota's (#20) Wei Pan.

The top 20 institutions in Computer Science are listed in full in the table below:

Ranked by Citations				
Rank	**Field**	**Papers**	**Citations**	**Cites Per Paper**

1	AT&T	1,963	22,271	11.35
2	IBM CORP	3,210	18,663	5.81
3	MIT	2,105	16,079	7.64
4	UNIV CALIF BERKELEY	1,734	16,028	9.24
5	STANFORD UNIV	1,773	15,458	8.72
6	UNIV ILLINOIS	2,108	10,549	5.00
7	PENN STATE UNIV	880	10,182	11.57
8	ARIZONA STATE UNIV	595	9,149	15.38
9	UNIV CALIF SAN DIEGO	1,230	9,099	7.40
10	UNIV UPPSALA	439	7,832	17.84
11	TOKYO METROPOLITAN UNIV	67	7,204	107.52
12	BRIGHAM YOUNG UNIV	161	7,083	43.99
13	CARNEGIE MELLON UNIV	1,777	7,077	3.98
14	UNIV MARYLAND	1,459	6,864	4.70
15	UNIV CALIF LOS ANGELES	1,122	6,852	6.11
16	GEORGIA INST TECHNOL	1,433	6,627	4.62
17	INRIA	1,659	6,625	3.99
18	UNIV TEXAS AUSTIN	1,193	6,605	5.54
19	HARVARD UNIV	785	6,428	8.19
20	UNIV MINNESOTA	906	6,332	6.99

SOURCE: *Essential Science Indicators* from the September 1, 2008 update covering a 10-year + 6-month period, 1998-June 30, 2008.

Full citation details of all of these institutions can be seen in *Essential Science Indicators*.

Keywords: computer hardware and architecture, computer software, software engineering and design, computer graphics, programming languages, theoretical computing, computing methodologies, broad computing topics, interdisciplinary computer applications, information systems and information technology, acquisition, processing, storage, management, and dissemination of information, communications via various devices and systems, bioinformatics and biostatistics..

PDF

back to top

Institutional Interviews : 2008 : The 20 Most-Cited Institutions in Computer Science, 1998-2008

Scientific Home | About Scientific | Site Search | Site Map

Copyright Notices | Terms of Use | Privacy Statement