DEPARTMENT RANKINGS

H. V. Jagadish

University of Michigan

2016: State of Affairs

Better known CS Dept rankings in US

- US News and World Report
- National Research Council (1995, 2010)

2018: CS Rankings Got Worse

Before

NO DATA and no transparency

US News & World Report Rankings of CS Departments

NOW

BAD DATA and no transparency

US News & World Report Rankings of Global Universities in CS

2018: CS Rankings Got Worse

Before
NO
US N

NOW
BAD
US N   in CS

Best Global Universities for Computer Science

f g+ y

Computer science is the study of computers and their uses, and the field comprises a wide range of subjects. They include software engineering and design, artificial intelligence theory, programming languages, information systems and information technology. These are the world's top universities for computer science, which were ranked based on their reputation and research in the field.

See the methodology »

BEST GLOBAL UNIVERSITIES
U.S.News
2018

Clarivate Analytics

#	University	Subject Score
#1	**Tsinghua University** — China Beijing — #64 – Best Global Universities	100
#2	**University of Texas--Austin** — United States Austin, TX — #32 (tied) – Best Global Universities	99.3
#3	**Nanyang Technological University** — Singapore — #55 (tied) – Best Global Universities	97
#4	**Massachusetts Institute of Technology** — United States Cambridge, MA — #2 – Best Global Universities	96.4
#5	**National University of Singapore** — Singapore — #43 – Best Global Universities	92.8
#6	**Stanford University** — United States Stanford, CA — #3 – Best Global Universities	91.3
#7	**Harvard University** — United States Cambridge, MA — #1 – Best Global Universities	90.7
#8	**University of California--Berkeley** — United States Berkeley, CA — #4 – Best Global Universities	86.9
#9	**Huazhong University of Science and Technology** — China Wuhan, Hubei — #282 (tied) – Best Global Universities	85.5
#10	**Zhejiang University** — China Hangzhou, Zhejiang — #159 (tied) – Best Global Universities	84.1
#11	**Swiss Federal Institute of Technology Zurich** — Switzerland Zurich — #25 – Best Global Universities	82.8
#12	**City University Hong Kong** — Hong Kong Kowloon, Hong Kong — #186 – Best Global Universities	82.7
#13	**King Abdulaziz University** — Saudi Arabia Jeddah — #110 – Best Global Universities	82
#14	**University of British Columbia** — Canada Vancouver, British Columbia — #27 – Best Global Universities	81.9
#15	**University of Waterloo** — Canada Waterloo, Ontario — #230 – Best Global Universities	81.3
#16	**Georgia Institute of Technology** — United States Atlanta, GA — #71 (tied) – Best Global Universities	81.2
#17	**Shanghai Jiao Tong University** — China Shanghai — #156 (tied) – Best Global Universities	81
#18	**University of Southern California** — United States Los Angeles, CA — #62 – Best Global Universities	80.8
#19	**Princeton University** — United States Princeton, NJ — #9 – Best Global Universities	80.4
#20	**Southeast University** — China Nanjing, Jiangsu — #382 (tied) – Best Global Universities	80.3

no transparenc
...port Rankings of C

no transparen
...port Rankings of C

Uses & abuses of rankings

Efficient way to inform decisions

- Choosing a PhD program (especially foreign students)

- Applying for an academic position (PhD graduates)

Imposes structure on the field

- e.g., CRA salary comparisons of "like" institutions.

Used in discussions between departments and administration

- Rewards for ratings improvements
- Funding for remedial action when ratings fall
- Reality check on claims

Problems with Ranking Schemes

- Trailing indicator

- Imposes a value system
  - Different people have different needs and will flourish in different environments

Nb: *Horror vacui*   -Parmenides 485BC

= "Nature abhors a vacuum"

<u>Infeasible to decide</u>:

There should be no ranking system.

Two Years Ago at Snowbird

Department Rankers and Rankings: Truths and Consequences

H. V. Jagadish, U. Michigan

Fred Schneider, Cornell U.

Steve Furber, U. Manchester

Bob Morse, US News & WR

DEPARTMENT RANKING COMMITTEE

CURRENT
Steve Blackburn (ANU, Australia)
Emery Berger (UMass, US)
Carla Brodley (Northeastern, US)

H. V Jagadish, Chair (Michigan, US)

Kathryn McKinley (Google US)

Mario Nascimento (Alberta, Canada)

Minjeong Shin (ANU, Australia)

Lexing Xie (ANU, Australia)

Andy Bernat, Ex-officio (CRA, US)

CHARGE in 2016

1. Determine if there is a data gathering role for CRA to assist with the various program ranking efforts.

2. Determine a set of metrics that are collectable or obtainable from others and that we would be comfortable standing behind.

3. Work with the various program ranking efforts to determine which of these metrics would be of value to them and which they would commit to using.

Work with Rankers

- US News was the major partner identified.

- Initial conversations were very positive.

- Ultimately, they decided they want to stick with reputation-based rankings for US programs, at least for now.

Rankings: can't live with'em, can't live without'em

The latest US News and World Report (USN&WR) ranking of Computer Science (CS) at global universities does a grave disservice to USN&WR readers and to CS departments all over the world [...] We urge the community to ignore the USN&WR rankings of Computer Science.
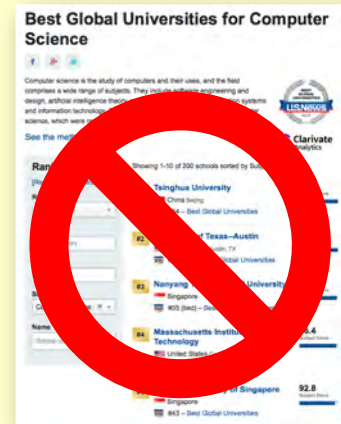
CRA Statement on US News and World Report Rankings of Computer Science Universities November 2017

GOTO Principles

Evaluation methodologies must be data-driven and meet at least the following criteria:

- **G**ood data
  - data have been cleaned and curated

- **O**pen
  - data available, regarding attributes measured, at least for verification

- **T**ransparent
  - process and methodologies are entirely transparent

- **O**bjective
  - based on measurable attributes

Is There Hope?

- Yes! `gotorankings.org`
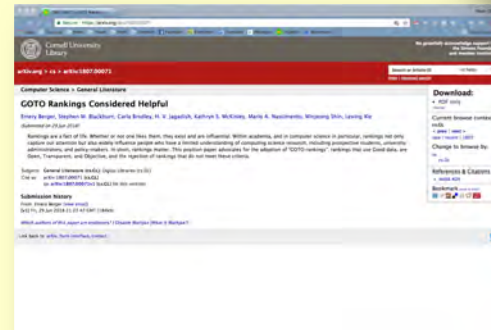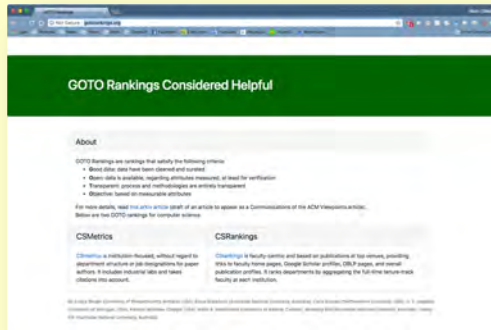
- Several efforts supporting GOTO principles
- Today, we will hear about three prominent efforts

Three Distinguished Panelists

- # Kuansan Wang
  - – Managing Director, Microsoft Research Outreach
  - – Microsoft Academic Services (http://aka.ms/msracad)
- # Kathryn S McKinley
  - – Senior Scientist, Google
  - – Chair, CRA Committee on Metrics
  - – csmetrics.org
- # Emery Berger
  - – Professor, UMass Amherst
  - – csrankings.org

Microsoft Academic Services

Kuansan Wang, Microsoft

Microsoft Academic Services

- How to empower researchers to do more and achieve more, with AI
- System components:
  - Knowledge acquisition
    - Machine reading all web documents
    - **Microsoft Academic Graph (MAG)**
  - Knowledge reasoning and inference
    - Search & Recommendation
    - **academic.microsoft.com**
  - Reinforcement learning
    - Predicting citation behaviors as crowd-sourced impact assessments

Microsoft Academic Graph

Annual growth rate 9.6% (x2@7.25 years)
~2M new publications/month
Bi-weekly updates available upon request!

Publications
175,369,863
Coming soon

Authors
211,481,059
Learn more

Fields of Study
229,031
Learn more

Conferences
4,028
Learn more

Journals
47,975
Learn more

Institutions
25,309
Learn more

Microsoft Academic

Search: artificial intelligence after 2008

1-8 of 5000+ results (

Sort by: Relevance ▼

Date Range

2009 ▼ to 201[8] ▼

Authors known for this topic

👤 Author

☐ Geoffrey E. Hinton
☐ Ilya Sutskever
☐ Yoshua Bengio
☐ Ross B. Girshick
☐ Jian Sun

Show more ∨

🏛 Affiliation

☐ Microsoft
☐ Google
☐ Stanford Univer[sity]
☐ University of Ca[…]
☐ University of To[…]
☐ University of Ox[ford]
☐ Massachusetts Institute of Technology

Top institutions for the topic

... Networks for Large-

Semantic, not just keyword matching

Karen Simonyan (University of Oxford),
Andrew Zisserman (University of Oxford)
Abstract: In this work we investigate
network depth on its accuracy in the

🔊 Citations (12,986) * 🗎 Download ⬚ Share " Cite

ImageNet Classification with Deep Convolutional Neural Networks

[…]s, pp 1097-1105

[…] Sutskever (University of Toronto),

[…] neural network to classify
[…] the ImageNet LSVRC- ∨

[Citations …] Download Share " Cite

Default Ranking in MA

- Lessons:
  - "The Google Scholar experiment" (2014)
  - "Promise and Pitfalls of Extending Google's PageRank Algorithm to Citation Networks" (2008)
- Saliency:
  - Probability of being referred to by other salient entities, aging over time
  - Compute for every type of nodes on the graph
  - Reinforcement learning for latent parameters

Paper saliencies in a venue
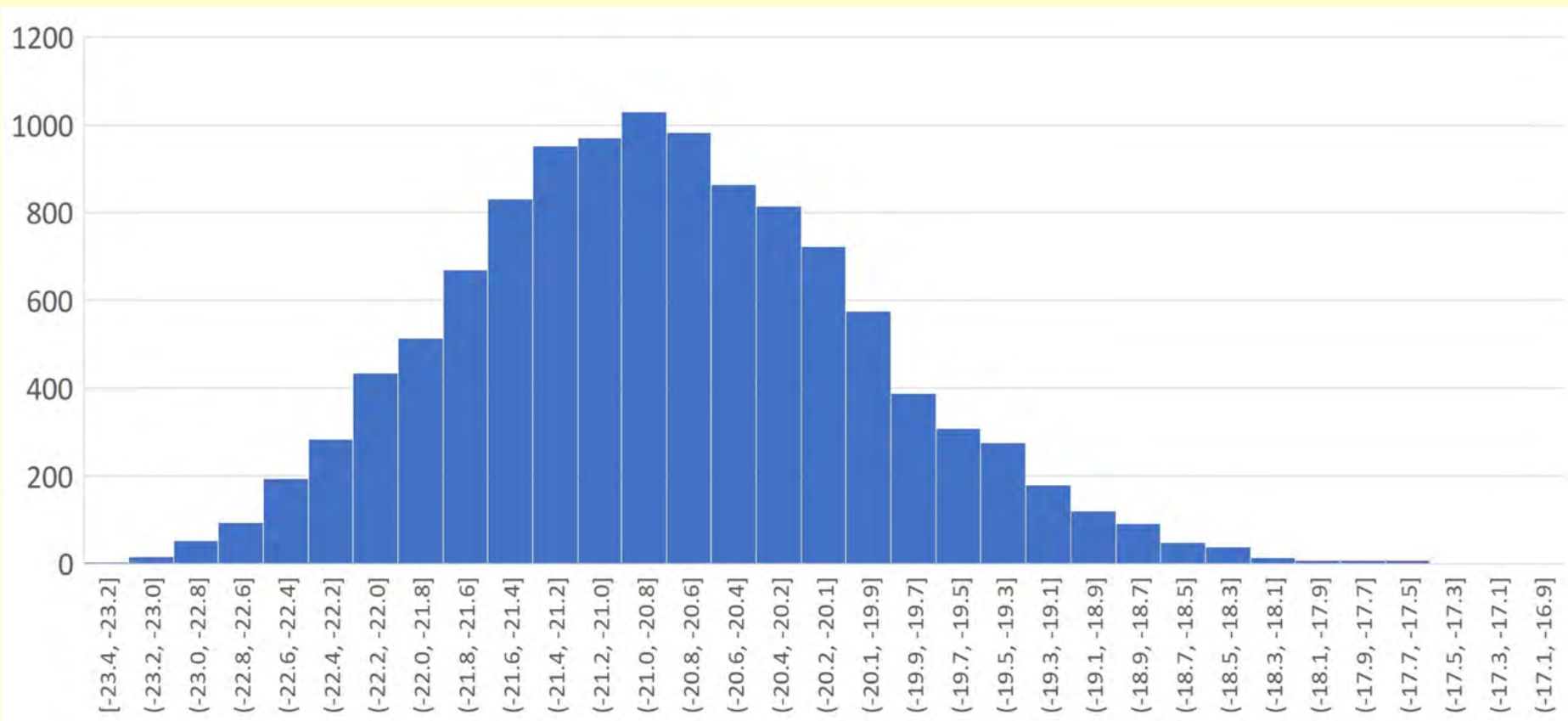
Publication venue: not a good predictor of impact

Productivity+impact both captured

Saliency vs. H-index for Authors

Citation indices	All	Since 2012
Citations	1602	1402
h-index	10	10
i10-index	11	10
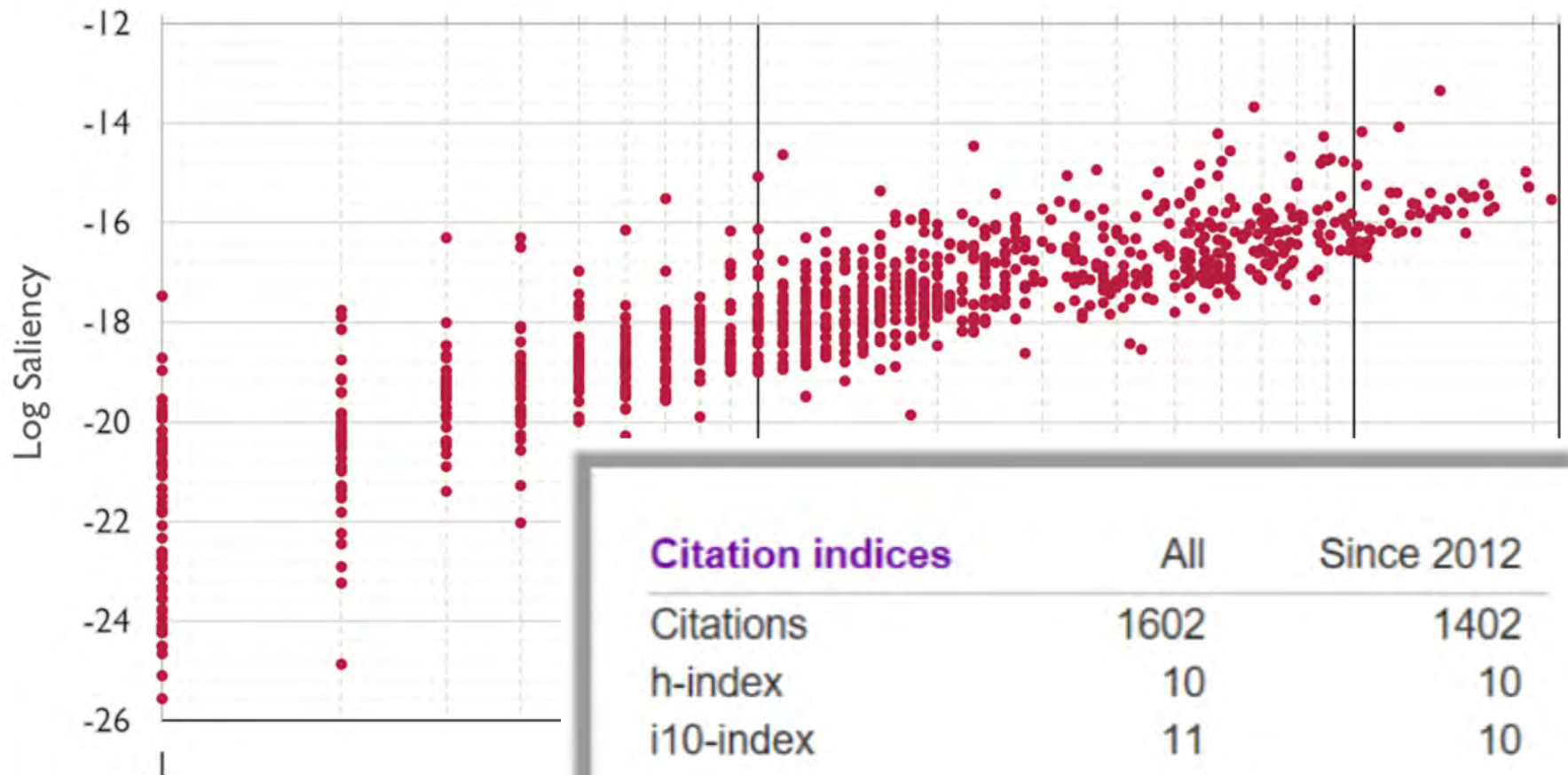
Top 25 Research institutions in CS
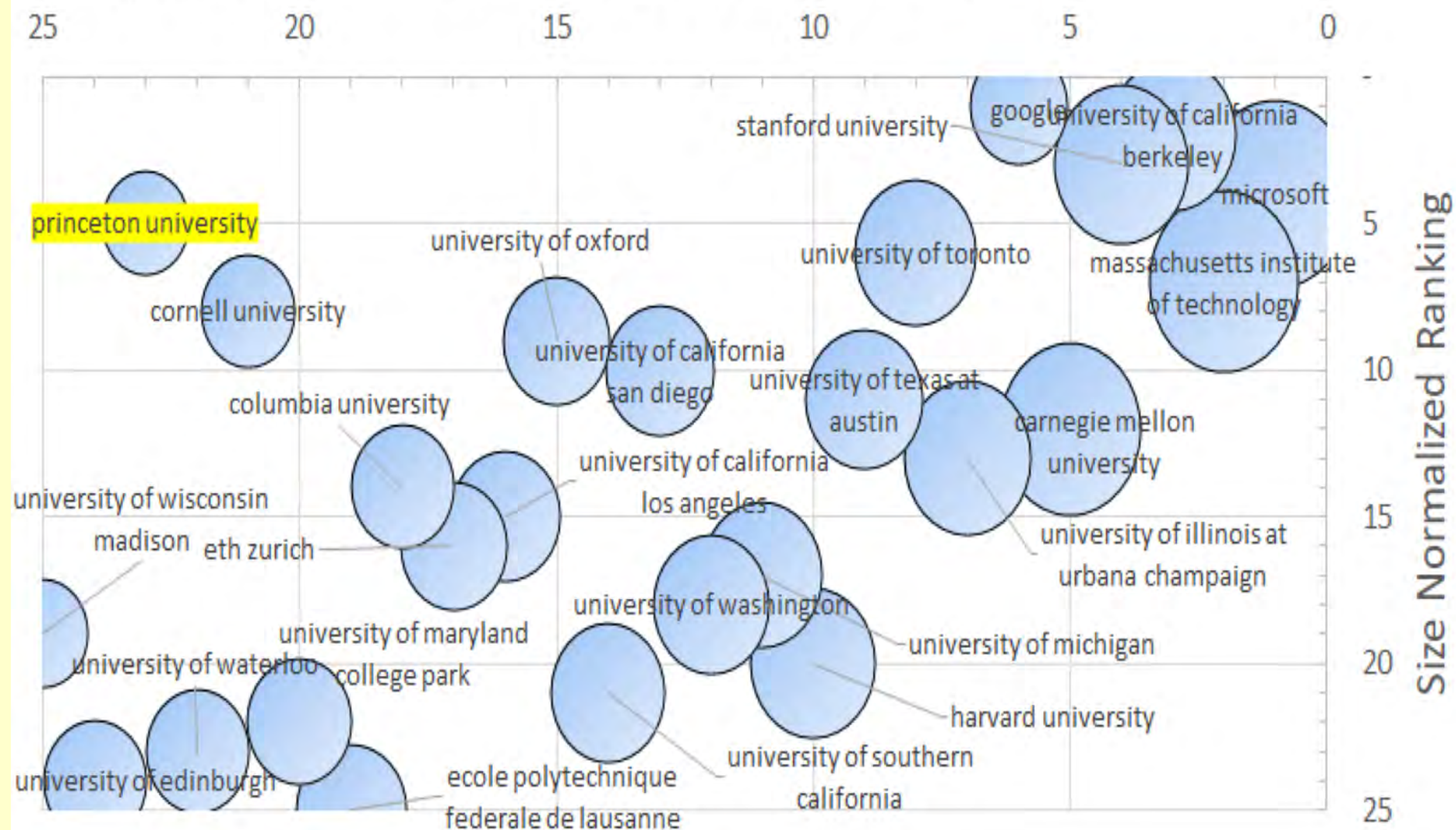
Top 25 institutions in AI
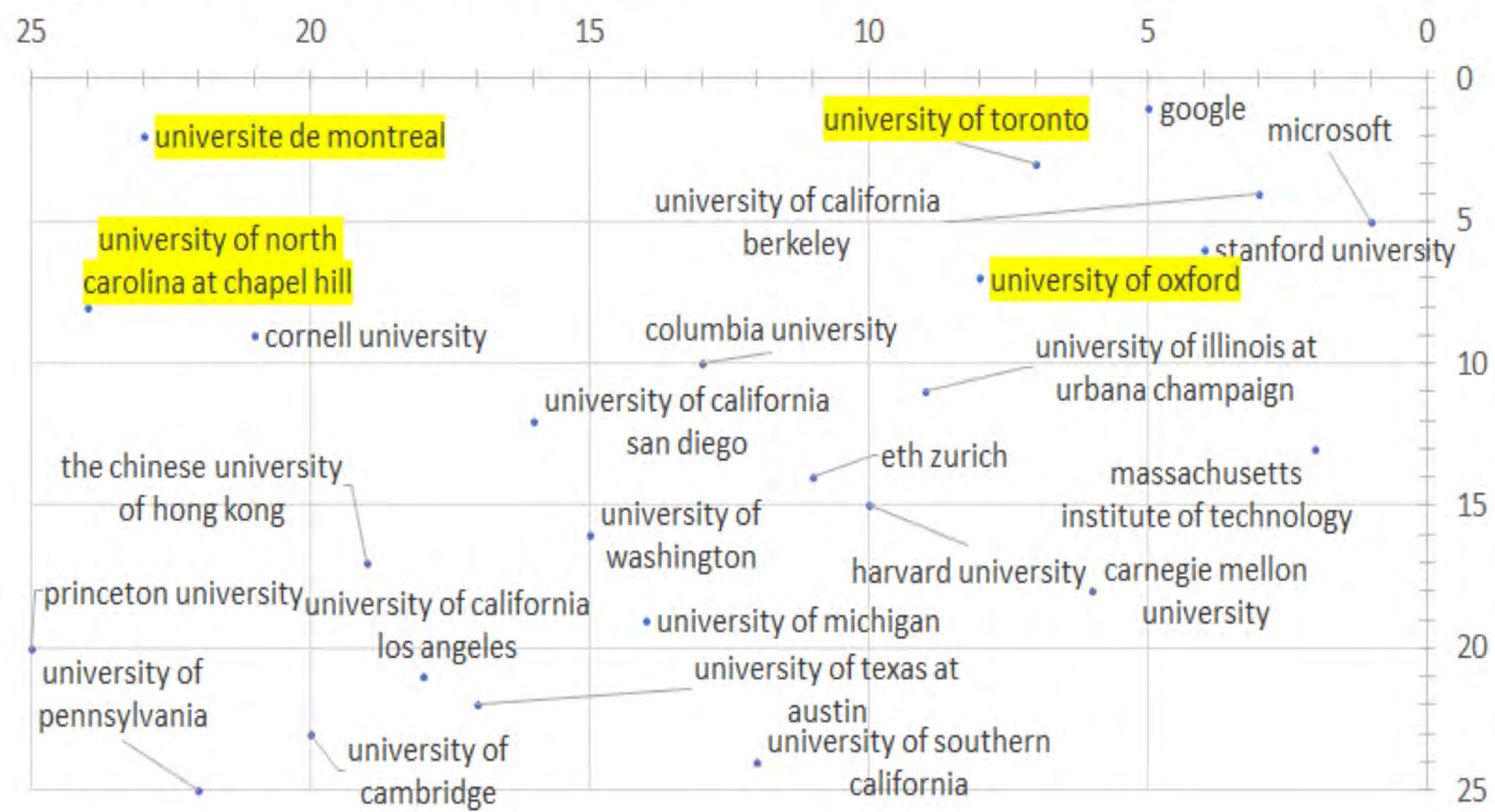
Top 25 institutions in Computer Vision
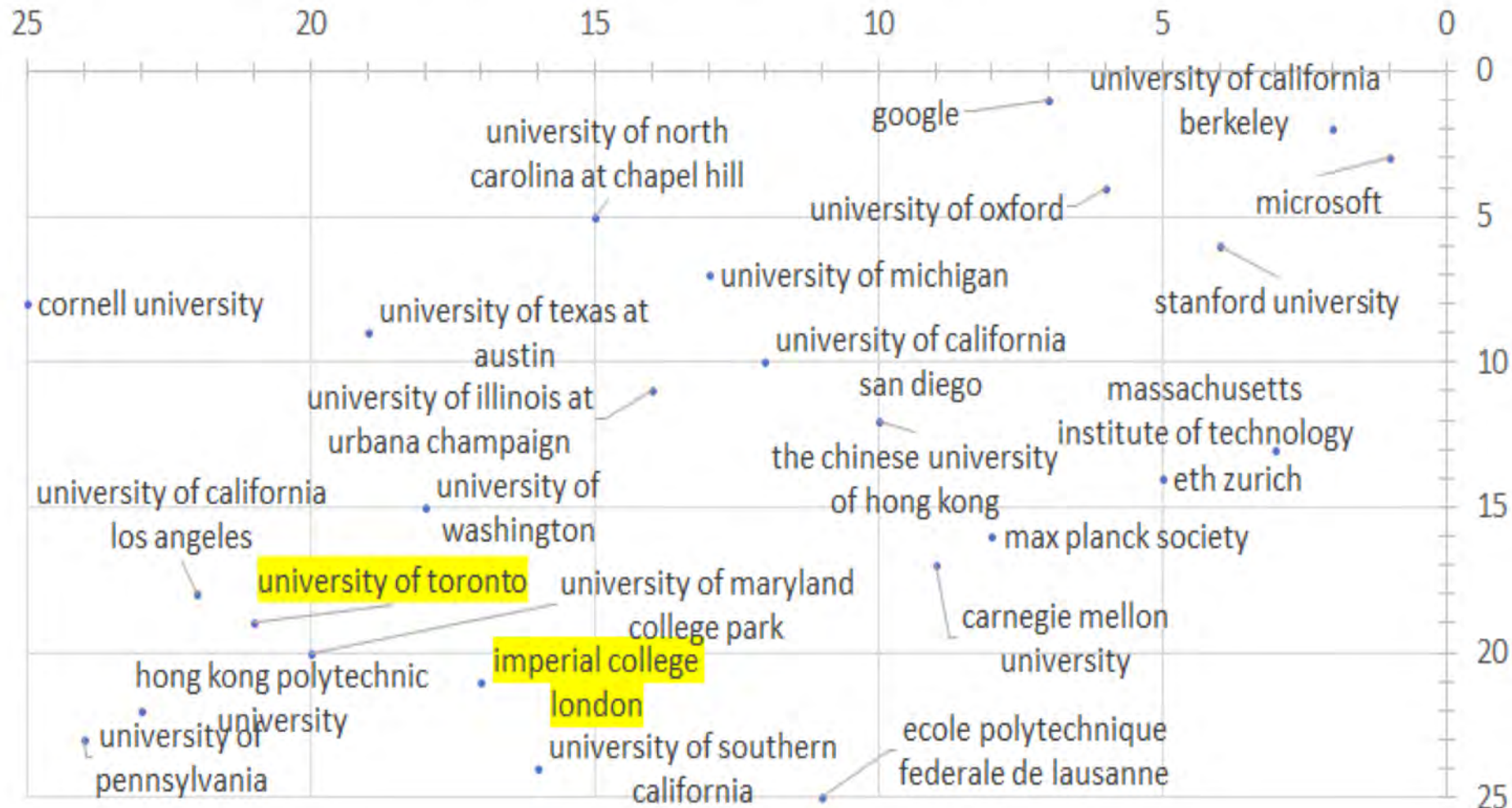
Open data to tell nuanced stories are available

MAS Supports GOTO

- Web scale reading enables cross-validation
  - Include preprints, conf proceedings, patents,...
  - CVs, homepages for author disambiguation
- MAG: Openly available upon request
  - https://aka.ms/msracad
- Promote open source ranking algorithms
  - Check out our GitHub repository
- "*...unreasonable to expect departments halfway around the world will have anything close to an accurate assessment of each other*" - CRA statement Nov. 2017

csmetrics.org

Kathryn S McKinley, Google

csmetrics.org 2017

Institutional ranking

Audience

- University administrators
- Faculty, students, parents

Key features

GOTO methodology

Configurable data

Configurable publication metrics

- Citations for past
- Counts for future

Show 20 entries

$\alpha = 0.3$ 0.0 ——[ ]—— 1.0

Combined = (Measured+α)$^{0.7}$ x (Predicted+α)$^{0.3}$

Rank	Institution CRA Academic	Measured	Predicted	Combined
1	Carnegie Mellon University	101698	9993	50702
2	Massachusetts Institute of Technology	96060	9600	48135
3	Stanford University	99710	8200	47126
4	University of California, Berkeley	89053	7094	41689
5	University of Illinois at Urbana–Champaign	76028	5791	35116
6	University of Washington	59375	5097	28426
7	Georgia Institute of Technology	49079	5547	25518
8	University of Texas at Austin	48915	4807	24388
9	University of Toronto	48211	3822	22537
10	University of Michigan	41134	5391	22358
11	University of California, San Diego	44335	3557	20799
12	Cornell University	39143	4330	20221
13	Princeton University	40781	3663	19791
14	University of Maryland, College Park	37293	3895	18936
15	University of Southern California	35742	3837	18299
16	University of California, Los Angeles	34138	3257	16870
17	University of Wisconsin-Madison	30573	3808	16366
18	Columbia University	29094	3715	15691
19	Purdue University	28306	3396	14983
20	University of Pennsylvania	27351	2547	13418

csmetrics.org 2017

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8	University of Texas at Austin			
9	University of Toronto			
10	University of Michigan			
11	University of California, Diego			
12	Cornell University			
13	Princeton University			
14	University of Maryland, College Park			
15	University of Southern California			
16	University of California, Angeles			
17	University of Wisconsin-Madison			
18	Columbia University			
19	Purdue University			
20	University of Pennsylvania			
21	Pennsylvania State University			
22	University of Massachusetts Amherst			
23	University of Waterloo			
24	University of California, Irvine			
25	University of Minnesota			
26	Harvard University			
27	University of British Columbia			
28	Ohio State University			
29	Arizona State University			
30	Rutgers University			
31	New York University			
32	University of California, Santa Barbara			
33	Johns Hopkins University			
34	University of North Carolina at Chapel Hill			
35	Duke University			

Ranking Institutions vs Individuals

Ranking institutions
- University administrators
  - Activity in area X
  - Do we need to invest more?
  - Did prior investments pay off?
  - Collaborations

- Faculty, students, parents
  - Where should we go?
  - Activity in area X
  - For graduate students, choosing faculty mentor(s)

Institution =
Publications of *all* affiliated authors

Curated & configurable by venue

Criteria: rigorous peer reviewed venues

Data

- Started with CRA venue list
- 209 conference venues
- 80 Journal venues
- Publications: cleaned DBLP data
- Citations from MAG
- 6646 Institutions, cleaned with MAG

Publication Data

Philosophy

- Rigorous peer review
- *Inclusive*: impact & activity beyond top tier
- Configurable

Example
Programming Languages

PARALLEL COMPUTING	PERFORMANCE ANALYSIS	**PROGRAMMING LANGUAGES**	
ROBOTICS	SECURITY	SOFTWARE ENGINEERING	SYSTEMS THEORY VERIFICATION
	VISION	WEB TECHNOLOGIES	OTHER

Venue Weight — Geo Mean ▼ — Predicted = Σ Paper Count x Venue Weight
All ▼ — Select Venue Type

Venue List	Type	Fullname	Weight
☑ ASPLOS	C	Architectural Support for Programming Languages and Operating Systems	18
☑ CASES	C	International Conference on Compilers, Architecture, and Synthesis for Embedded Systems	4
☑ CC	C	International Conference on Compiler Construction	5
☑ CGO	C	International Symposium on Code Generation and Optimization	8
☑ ECOOP	C	European Conference on Object Oriented Programming	9
☑ ESOP	C	European Symposium on Programming	8
☑ HiPEAC	C	International Conference on High Performance and Embedded Architectures and Compilers	7
☑ ICALP	C	International Colloquium on Automata, Languages and Programming	5
☑ ICFP	C	International Conference on Functional Programming	7
☑ ISMM	C	International Symposium on Memory Management	6
☑ LCTES	C	ACM SIGPLAN Conference on Languages, Compilers and Tools for Embedded Systems	5
☑ OOPSLA	C	ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications	9
☑ PACT	C	International Conference on Parallel Architectures and Compilation Techniques	10
☑ PLDI	C	ACM SIGPLAN Conference on Programming Language Design and Implementation	18
☑ POPL	C	ACM-SIGACT Symposium on Principles of Programming Languages	16
☑ TACO	J	ACM Transactions on Architecture and Code Optimization	3
☑ TOPLAS	J	ACM Transactions on Programming Languages and Systems	14
☑ VEE	C	International Conference on Virtual Execution Environments	12

Cleaning DBLP publication data

Full research papers from 2007-2016

Download with DBLP *filters*

Add new filters for titles, front matter, etc.

Number of papers per year verification

Reviewed by hand all years for errors

ACM & IEEE sources have errors

List to MAG for citations

Areas

Metrics

Year
Predicted [2014] Year of publication [2016]
Measured [2007] [2013]
Category Select/Deselect All ☑
Go

Show 20 ▾ entries   α = 0.3 0.0 ━━━ 1.0
Combined = (Measured+ε)$^{0.7}$ x (Predicted+ε)$^{0.3}$

Rank	Institution	Measured	Predicted	Combined

Configure parameters and select Go button

Measured citations for older papers

Paper = 1 divided by authors

Each institution receives fractional credit, never changes

Predicted weighted counts of recent papers

Weight recent by venue impact (configurable)

Venue impact = geomean of citations per paper

Configuration

area, venue, venue weighting, year, past, predicted weighting of past/predicted

Nothing   Something   Perfection

| ← an infinite distance → | ← barely noticable → |
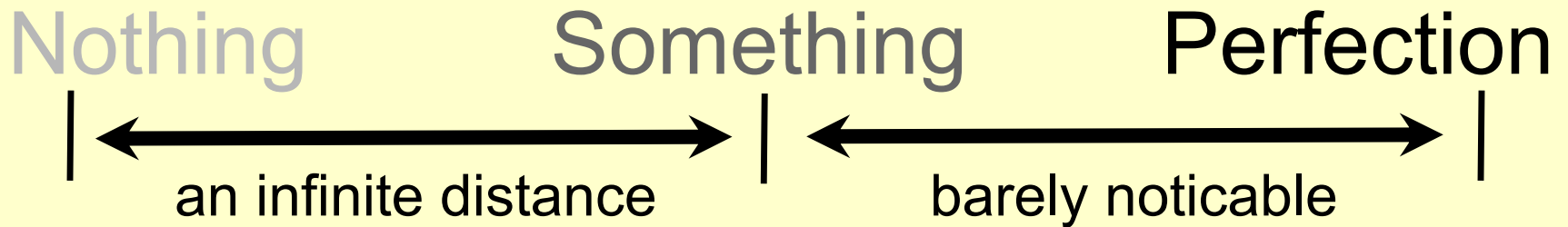
Better, but not perfect

- DORA Declaration of Research Assessment says do not count by venue impact!
- Citations practices change, differ by area
- Citation gaming
- Faculty size, Faculty current institution
- Lack of Interdisciplinary coverage (e.g. no Nature)
- Missing other metrics, e.g.,funding, awards, etc.
- Volunteer workforce

GOTO: code+data on github https://github.com/csmetrics/csmetrics.org

FAQ and User guide: http://csmetrics.org/faq/
https://github.com/csmetrics/csmetrics.org#quickstart

csrankings.org

Emery Berger

University of Massachusetts, Amherst

csrankings

Publicly announced July 2016

CSRankings: Computer Science Rankings

CSRankings is a metrics-based ranking of top computer science institutions around the world. **Click on a triangle** (▶) to expand areas or institutions. **Click on a name** to go to a faculty member's home page. **Click on a pie** (the ⦿ after a name or institution) to see their publication profile as a pie chart. **Click on a Google Scholar icon** (📷) to see publications, and **click on the DBLP logo** (▶) to go to a DBLP entry.

Rank institutions in [the USA ◆] by publications from [2008 ◆] to [2018 ◆]

All Areas [off | on]

AI [off | on]

- ▶ Artificial intelligence ☑
- ▶ Computer vision ☑
- ▶ Machine learning & data mining ☑
- ▶ Natural language processing ☑
- ▶ The Web & information retrieval ☑

Systems [off | on]

- ▶ Computer architecture ☑
- ▶ Computer networks ☑
- ▶ Computer security ☑
- ▶ Databases ☑
- ▶ Design automation ☑
- ▶ Embedded & real-time systems ☑
- ▶ High-performance computing ☑
- ▶ Mobile computing ☑
- ▶ Measurement & perf. analysis ☑
- ▶ Operating systems ☑
- ▶ Programming languages ☑
- ▶ Software engineering ☑

Theory [off | on]

- ▶ Algorithms & complexity ☑
- ▶ Cryptography ☑

Rank	Institution	Count	Faculty
1	▶ Carnegie Mellon University ⦿	16.0	147
2	▶ Massachusetts Institute of Technology ⦿	11.7	84
3	▶ Stanford University ⦿	10.7	58
4	▶ University of California - Berkeley ⦿	10.5	84
5	▶ Univ. of Illinois at Urbana-Champaign ⦿	9.3	83
5	▶ University of Michigan ⦿	9.3	73
7	▶ Cornell University ⦿	8.4	72
8	▶ University of Washington ⦿	7.5	53
9	▶ Georgia Institute of Technology ⦿	6.8	77
10	▶ University of California - San Diego ⦿	6.6	52
11	▶ University of Wisconsin - Madison ⦿	5.8	50
12	▶ University of Maryland - College Park ⦿	5.7	50
13	▶ Columbia University ⦿	5.5	46
14	▶ University of Pennsylvania ⦿	5.4	46
15	▶ University of Southern California ⦿	5.2	46
16	▶ University of Texas at Austin ⦿	5.1	41
17	▶ University of California - Los Angeles ⦿	4.9	37
17	▶ Princeton University ⦿	4.9	50
19	▶ Northeastern University ⦿	4.7	55
20	▶ Purdue University ⦿	4.5	53
20	▶ University of Massachusetts Amherst ⦿	4.5	48

csrankings

Faculty-centric, conference pub-focused

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- ▶ Measurement & perf. analysis ☑
- ▶ Operating systems ☑
- ▶ Programming languages ☑
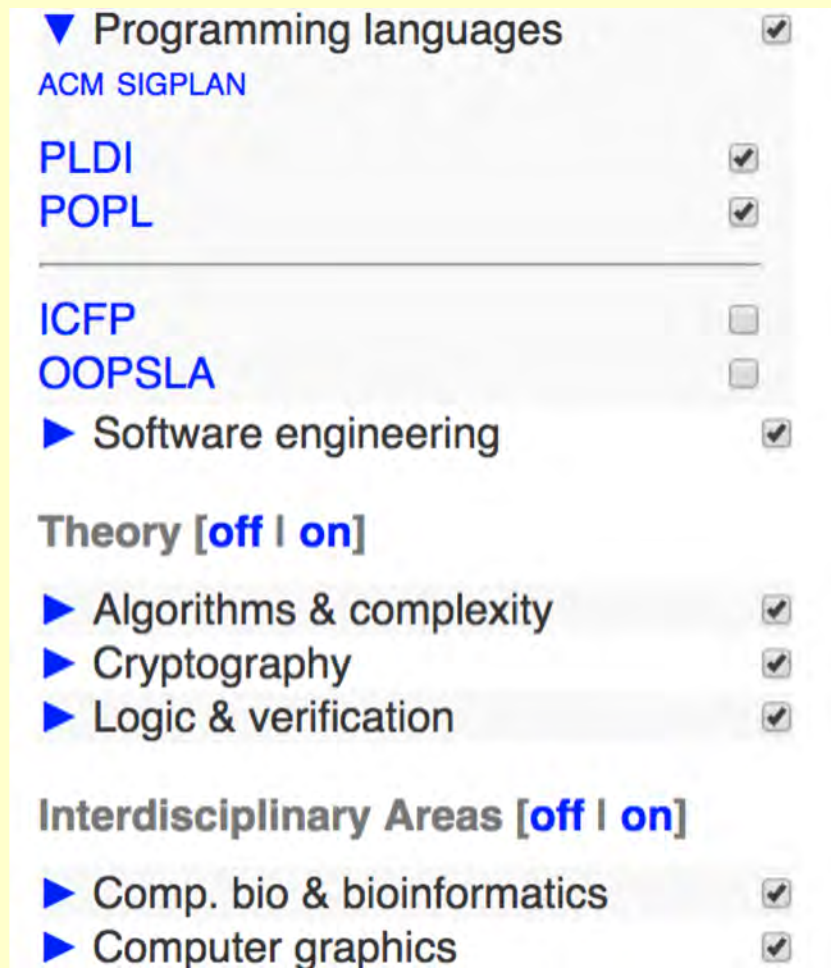- ▶ Software engineering ☑

Theory [off | on]

Rank	Institution	Count	Faculty
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Faculty	# Pubs	Adj. #
Eric P. Xing ML ☗ ▧ ▪●	135	41.2
Martial Hebert VISION ☗ ▧ ▪●	85	25.7
Ariel D. Procaccia AI ☗ ▧ ▪●	80	25.5
Howie Choset ROBOTICS ☗ ▧ ▪●	71	20.5
Ruslan Salakhutdinov ML ☗ ▧ ▪●	60	19.9
J. Andrew Bagnell ROBOTICS ☗ ▧ ▪●	60	16.6
Christos Faloutsos ML ☗ ▧ ▪●	58	13.9
Pradeep Ravikumar ML ☗ ▧ ▪●	57	16.3
Tuomas Sandholm AI ☗ ▧ ▪●	54	21.8
David P. Woodruff THEORY ☗ ▧ ▪●	53	20.5
Anind K. Dey HCI ☗ ▧ ▪●	53	15.6
Deva Ramanan VISION ☗ ▧ ▪●	48	17.6
Eduard H. Hovy NLP ☗ ▧ ▪●	45	14.5
Barnabás Póczos ML ☗ ▪●	44	13.0
Scott E. Hudson HCI ☗ ▧ ▪●	40	10.8
Venkatesan Guruswami THEORY ☗ ▧ ▪●	39	16.4
Takeo Kanade VISION,ROBOTICS ☗ ▧ ▪●	39	12.1
Lorrie Faith Cranor HCI ☗ ▧ ▪●	39	6.3
William W. Cohen NLP ☗ ▧ ▪●	37	11.9

csrankings

Faculty-centric, conference pub-focused

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Eduard H. Hovy NLP	45	14.5
Barnabás Póczos ML	44	13.0
Scott E. Hudson HCI	40	10.8
Venkatesan Guruswami THEORY	39	16.4
Takeo Kanade VISION,ROBOTICS	39	12.1
Lorrie Faith Cranor HCI	39	6.3
William W. Cohen NLP	37	11.9
Anupam Gupta THEORY	37	11.1
Vipul Goyal CRYPTO,THEORY	34	12.7
Tom M. Mitchell NLP	34	11.3
David G. Andersen NETWORKS	33	6.9

dept =
current faculty

count
normalized
across
disciplines
(normalizes for
publication rate)

csrankings

Faculty-centric, conference pub-focused
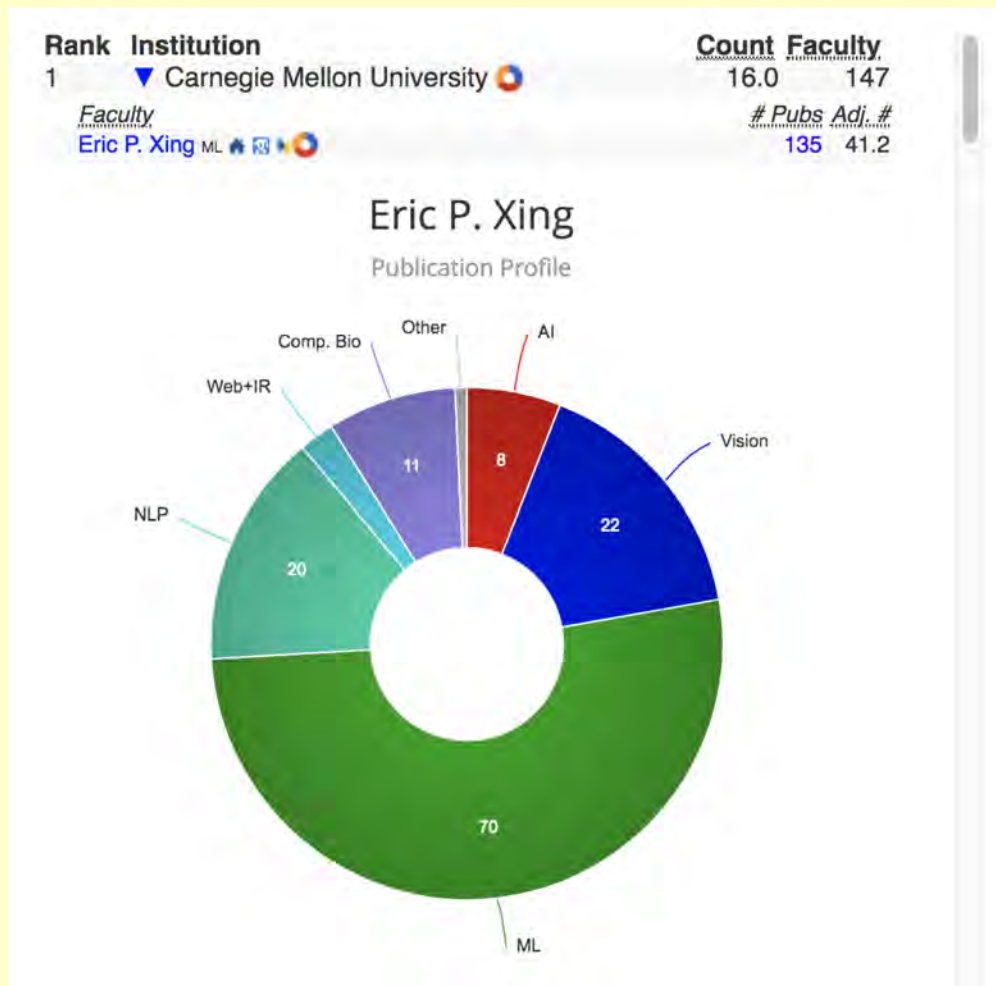
csrankings

Counts papers in *top* conferences

All Areas [off | on]

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Systems [off | on]

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- ▶ Measurement & perf. analysis ☑
- ▶ Operating systems ☑
- ▶ Programming languages ☑
- ▶ Software engineering ☑

Theory [off | on]

csrankings

Counts papers in *top* conferences

▶ Programming languages ☑
▶ Software engineering ☑

Theory [off | on]

▶ Algorithms & complexity ☑
▶ Cryptography ☑
▶ Logic & verification ☑

Interdisciplinary Areas [off | on]

▶ Comp. bio & bioinformatics ☑
▶ Computer graphics ☑
▶ Economics & computation ☑
▶ Human-computer interaction ☑
▶ Robotics ☑
▶ Visualization ☑

csrankings

Counts papers in *top* conferences

▼ Programming languages ✔	
ACM SIGPLAN	
PLDI ✔	
POPL ✔	
ICFP ☐	+ optional *below-the-fold* conferences
OOPSLA ☐	
▶ Software engineering ✔	
Theory [off | on]	
▶ Algorithms & complexity ✔	
▶ Cryptography ✔	
▶ Logic & verification ✔	
Interdisciplinary Areas [off | on]	
▶ Comp. bio & bioinformatics ✔	
▶ Computer graphics ✔	

csrankings

Publicly announced July 2016

– Now cited by growing list of department web pages (Berkeley, Michigan, Edinburgh, Cornell, CMU…)
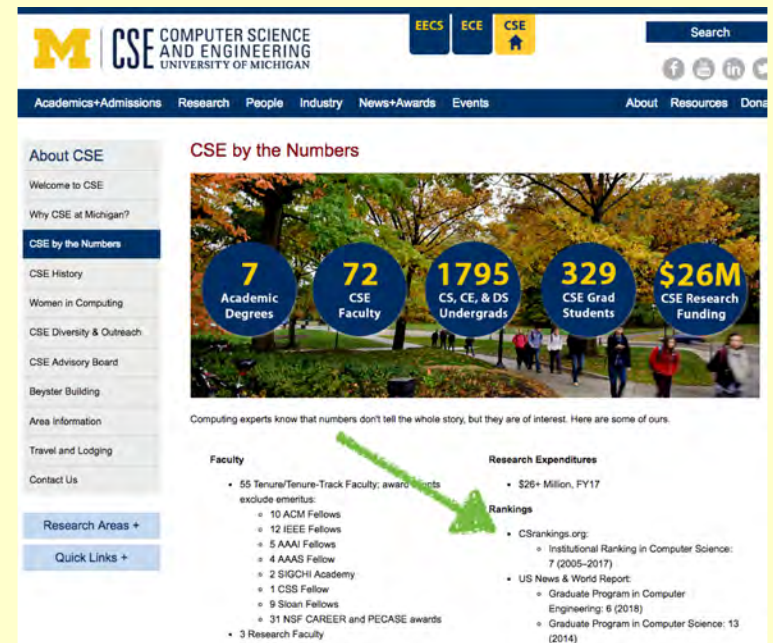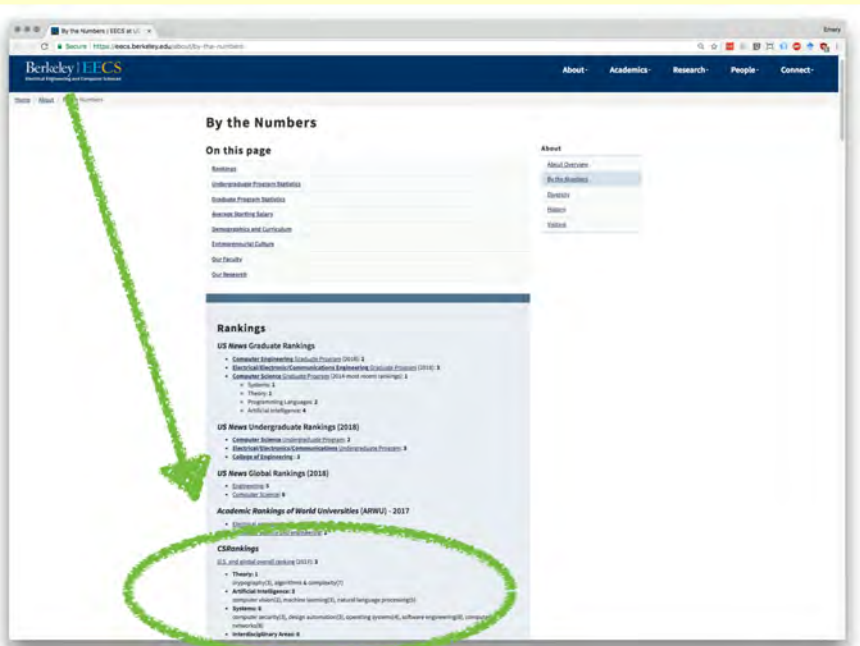
csrankings

Publicly announced July 2016
> 300K users to date
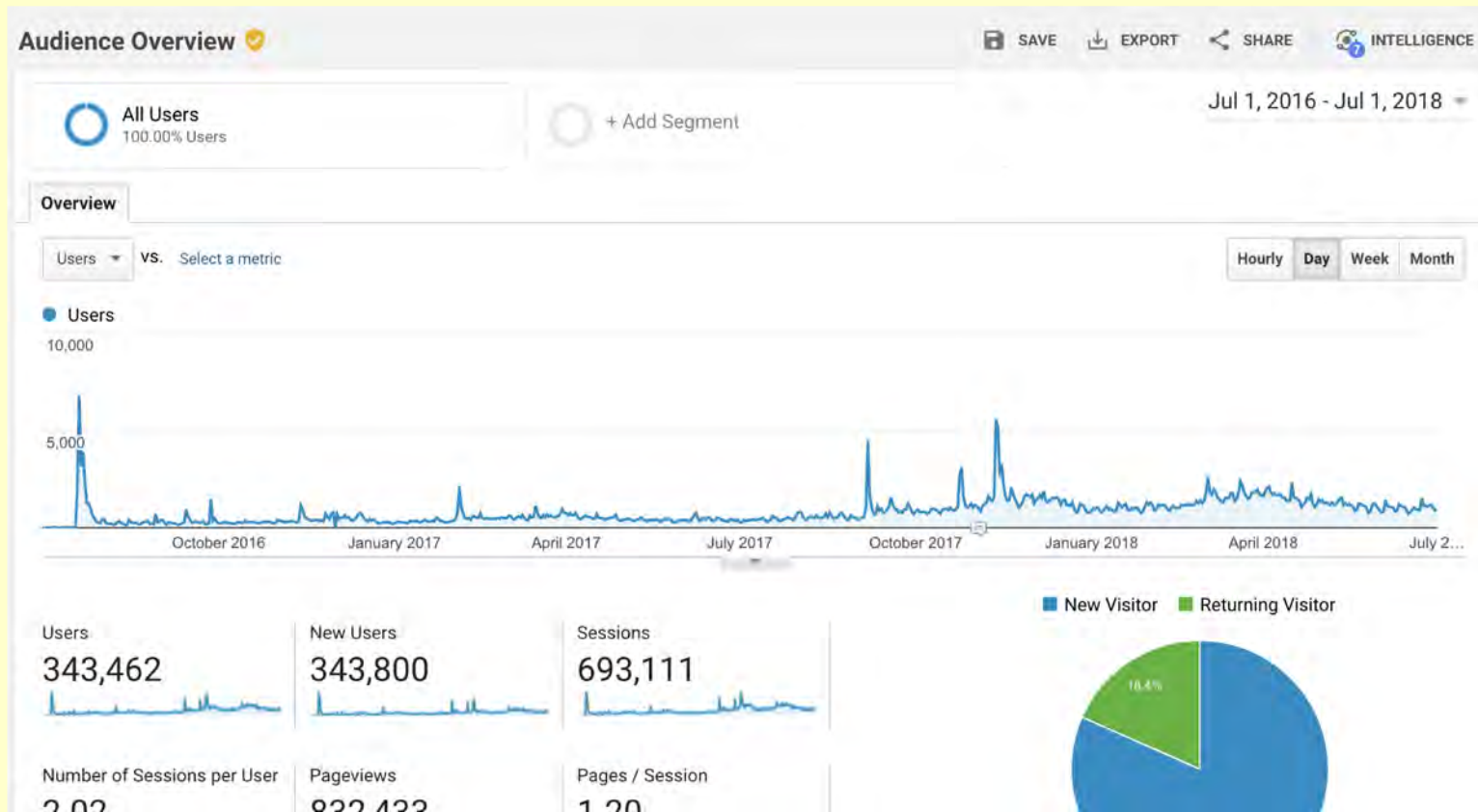
csrankings

Can select specific subfields of interest (with "permalinks")

CSRankings: Computer Science Rankings

CSRankings is a metrics-based ranking of top computer science institutions around the world. **Click on a triangle (▶)** to expand areas or institutions. **Click on a name** to go to a faculty member's home page. **Click on a pie** (the ⊙ after a name or institution) to see their publication profile as a pie chart. **Click on a Google Scholar icon** (🔍) to see publications, and **click on the DBLP logo** (•) to go to a DBLP entry.

Rank institutions in [the USA   ↕] by publications from [2008 ↕] to [2018 ↕]

All Areas [off | on]

AI [off | on]

- ▶ Artificial intelligence ☑
- ▶ Computer vision ☑
- ▶ Machine learning & data mining ☑
- ▶ Natural language processing ☑
- ▶ The Web & information retrieval ☑

Systems [off | on]

- ▶ Computer architecture ☐
- ▶ Computer networks ☐
- ▶ Computer security ☐
- ▶ Databases ☐
- ▶ Design automation ☐
- ▶ Embedded & real-time systems ☐
- ▶ High-performance computing ☐
- ▶ Mobile computing ☐
- ▶ Measurement & perf. analysis ☐

Rank	Institution	Count	Faculty
1	▶ Carnegie Mellon University ⊙	56.5	80
2	▶ Cornell University ⊙	30.3	40
3	▶ Stanford University ⊙	26.9	32
4	▶ Georgia Institute of Technology ⊙	22.0	31
5	▶ University of Maryland - College Park ⊙	19.1	26
6	▶ University of California - Berkeley ⊙	19.0	40
7	▶ Massachusetts Institute of Technology ⊙	18.7	48
8	▶ University of Michigan ⊙	18.4	33
9	▶ University of Massachusetts Amherst ⊙	16.3	29
10	▶ Univ. of Illinois at Urbana-Champaign ⊙	15.9	32
11	▶ University of Pennsylvania ⊙	15.3	26
12	▶ University of Southern California ⊙	14.7	26
13	▶ University of Texas at Austin ⊙	14.5	17
13	▶ University of Washington ⊙	14.5	30
15	▶ Columbia University ⊙	12.8	23

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Yann LeCun shared **Charles Sutton's** post.
57 mins · 🌐

Charles Sutton writes about CS department rankings.

As we know, the US News & World Report ranking is ridiculous and should be ignored.

CSrankings.org has considerably better methodology, and allows you to see how CS departments stack up in subfields of computer science.

For example, NYU is quite good in ML, vision, NLP, theory, verification, crypto, graphics and visualization. Click these subfields and NYU is number 6, behind CMU, MIT, Stanford, Berkeley and Cornell:

http://csrankings.org/...

With all subfields turned on, NYU is 19th, largely because it's a relatively small department with a few areas of excellence and entire areas with little or no presence.

The most important question to pick a place for your PhD is "who do you want to work with?"

csrankings

"who do you want to work with?"

CSRankings: Computer Science Rankings

CSRankings is a metrics-based ranking of top computer science institutions around the world. **Click on a triangle (►)** to expand areas or institutions. **Click on a name** to go to a faculty member's home page. **Click on a pie** (the 🔴 after a name or institution) to see their publication profile as a pie chart. **Click on a Google Scholar icon** (icon) to see publications, and **click on the DBLP logo** (icon) to go to a DBLP entry.

Rank institutions in [the USA ▾] by publications from [2008 ▾] to [2018 ▾]

All Areas [off | on]

AI [off | on]

- ► Artificial intelligence ☐
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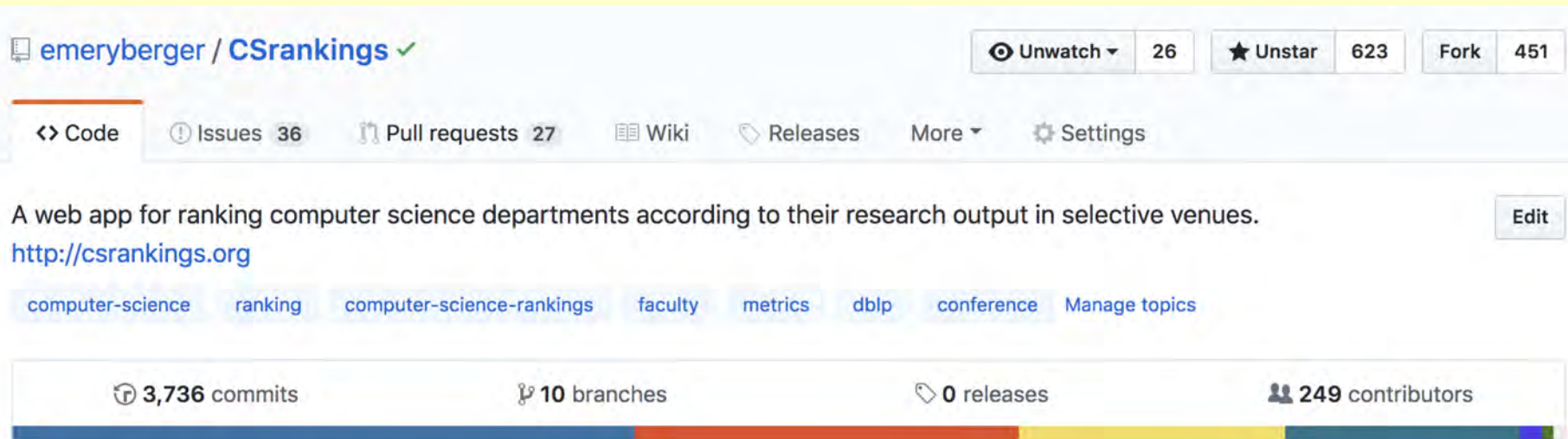- ► The Web & information retrieval ☐

Systems [off | on]

- ► Computer architecture ☐
- ► Computer networks ☐
- ► Computer security ☐
- ► Databases ☐
- ► Design automation ☐
- ► Embedded & real-time systems ☐
- ► High-performance computing ☐
- ► Mobile computing ☐
- ► Measurement & perf. analysis ☐
- ► Operating systems ☑
- ► Programming languages

Rank	Institution	Count	Faculty
1	► Massachusetts Institute of Technology 🔴	14.4	16
2	► University of California - Berkeley 🔴	8.3	13
3	▼ University of Michigan 🔴	7.8	12

Faculty		# Pubs	Adj. #
Jason Flinn OS,ARCH,MOBILE		7	2.0
Manos Kapritsos OS		6	0.9
Baris Kasikci OS		3	0.8
Peter M. Chen ARCH		3	0.7
Mosharaf Chowdhury NETWORKS		2	0.5
Zhuoqing Morley Mao MOBILE,METRICS,SECURITY		2	0.5
Scott A. Mahlke ARCH		2	0.4
Michael J. Cafarella DB		1	0.3
Satish Narayanasamy ARCH		1	0.3
Stéphane Lafortune		1	0.2
Harsha V. Madhyastha NETWORKS		1	0.2
Thomas F. Wenisch ARCH		1	0.2

| 4 | ► Stanford University 🔴 | 6.7 | 10 |

csrankings

GOTO - all code & data on GitHub

- https://github.com/emeryberger/CSrankings

emeryberger / **CSrankings** ✓   ⊙ Unwatch ▾ 26   ★ Unstar 623   Fork 451

<> Code   ⊙ Issues 36   ⎇ Pull requests 27   ⊞ Wiki   ⬙ Releases   More ▾   ⚙ Settings

A web app for ranking computer science departments according to their research output in selective venues.   Edit
http://csrankings.org

computer-science   ranking   computer-science-rankings   faculty   metrics   dblp   conference   Manage topics

⊕ **3,736** commits   ⎇ **10** branches   ⬙ **0** releases   ⛌ **249** contributors

FAQ here: http://csrankings.org/faq.html

What Do We Want?

- Reasonable people can disagree about precisely what to measure and how to combine measures into a rank.
- Some may even prefer to have a multi-dimensional score rather than a strict linear rank ordering.
- Let us focus today on some principles we would like to see followed.

GOTO Principles

Evaluation methodologies must be data-driven and meet at least the following criteria:

- **G**ood data
  - data have been cleaned and curated

- **O**pen
  - data available, regarding attributes measured, at least for verification

- **T**ransparent
  - process and methodologies are entirely transparent

- **O**bjective
  - based on measurable attributes

Discussion Period

Straw Poll 1

All metrics and rankings of Computing departments should follow GOTO principles.

Straw Poll 2

The CRA should fund a project to promote GOTO rankings.

Straw Poll 3

I will personally ignore any ranking that does not follow GOTO principles.