

Doctorado en Ingeniería de Sistemas e Informática, UZ
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Publish or Perish

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My Background

- Professor on Systems Engineering and Automatic Control
- Research on perception and environment understanding in robotics
- One book and more than 60 papers co-authored
- +200 papers reviewed for journals and conferences
- +80 papers handled as Associate Editor of the IEEE Transactions on Robotics, IROS, RSS, obtaining reviews and writing recommendations for their publication or rejection
- This presentation reflects my own experience and opinions

Acknowledgement

- Thanks to José Neira, Javier Mínguez, Diego Gutiérrez, Eduardo Mena and Javier Campos for their suggestions and comments on this presentation.



Publish or Perish

Part I: Why, When, Where, How much?

1. Why Publish?
2. When Publish?
3. Where Publish?
 - Journal and Conference Rankings. Impact Factor.
4. How much?
 - Quantity, Quality, Impact
 - Country and Institution Rankings
5. Useful tools
 - ISI web, Google Scholar, PoP, SCImago,...

Part II: How?

1. The publishing process
2. How to write a paper?
3. How to write a review?
4. How to write a rebuttal?
5. Ethical Issues
 - Authorship, Plagiarism, Salami slicing, Conflicts of interest,...



Publish or Perish

Part I: Why, When, Where, How much?

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1. Why Publish?

1. To contribute to the advance of knowledge

- Publish = make **public** the results of your research
- Other researchers can build on it

“If I have seen further it is by standing on the shoulders of giants”, Isaac Newton (1676), but the phrase is first attributed to Bernard de Chartres (XII century)

2. To be recognized as the author of an idea

- Gauss is credited with developing least-squares analysis in 1795, but Legendre was the first to publish the method in 1805

3. To improve your CV

- “Publish or perish” refers to the pressure to publish work constantly to further or sustain a career in academia.

See [Wikipedia: Publish or Perish](#)

- OK, but never forget reason #1
- Avoid “salami slicing” and other misconducts (see part II)



Reasons for not publishing

Good reason

- To patent the idea
 - OK, but first patent, and then publish

Bad reasons

- The idea is still not perfect
 - Don't worry, nothing is perfect
 - If it's solid enough, publish it.
 - Others will use it and improve it
- They will not accept it
 - The only **absolutely necessary** condition is submitting it
- Nobody will read it
 - Learn how to improve your chances (see this and next talk)



2. When Publish?

- As soon as possible
 - When you have a **novel** idea, method or result,...
 - you can **claim** some advantages over previous results,...
 - and you have enough **evidence** to support your claims.
- What's enough evidence?
 - A formal proof, for a theoretical result
 - Experimental results, for a new algorithm or method
 - » Mandatory in mature problems, and in some fields: computer vision, graphics,...
 - » If there are standard datasets or benchmarks, use them
 - Simulations can be enough for young problems
 - » In any case, they are useful to analyze the properties of an algorithm: running time, scalability, degradation with noise,...

3. Where Publish?

- Conference or Journal?
 - First, Conference
 - » Quick and broad dissemination (in ~6 months)
 - » Get feedback from colleagues
 - » ☹ in Spain **very small** value for your CV
 - » ☹ may be very expensive
 - Then, Journal
 - » More details, results and in-depth discussion
 - » Better review process that will improve your paper
 - » ☹ Delay of 1-2 years in the publishing process
 - Special issues are faster (6-12 months)

Where Publish?

- National conferences?
 - How much did you learn from national conference papers?
 - They typically have very low impact
 - Much less expensive than an international conference
 - Useful to train young researchers in writing papers and performing public presentations
 - Useful to meet your national colleagues
 - But **always** write it in English

Where Publish?

- Know your research field
- Know the orientation of each journal and conference:
 - Theoretical contributions / Applications and system papers?
 - Incremental advances / Ground-breaking novelties?
- Which are the best journals and conferences in you field?
 - Good papers that you have read
 - Ask your supervisor and colleagues
 - Journal and conference rankings
- My advice: submit to the best places you can
 - It is more likely that you will get good and useful reviews
 - If rejected, listen to the reviewers, improve it, and try again
 - If you tried in a good place, you can always retry in an easier one
 - But don't point too high, try to be realistic about your possibilities



Journal Rankings: JCR – Impact Factor

- JCR: Journal Citation Reports
 - www.accesowok.fecyt.es → Acceso WOK → Select a Database → Journal Citation Reports
 - Systematic review of journal impact and influence
 - Measures yearly the number of citations to journal papers made in other journal papers and **a few** conferences
 - Used as standard reference by Spanish quality agencies: ANECA, ACPUA,...
- Impact Factor: **average** number of cites per year:
$$\frac{\text{cites in year } x \text{ to recent papers in the journal}}{\text{recent papers in the journal}}$$

recent = published from year $x-2$ to $x-1$ (impact factor)
or
published from year $x-5$ to $x-1$ (5-year impact factor)

Journal Citation Reports[®]

WELCOME ? HELP

Journal Summary List

2009 JCR Science Edition

Journal Title Changes

Journals from: **subject categories ROBOTICS** VIEW CATEGORY SUMMARY LIST

Sorted by: Impact Factor SORT AGAIN

Cites in the same year

Median of cite's age
Indicates long-term
journal influence

Journals 1 - 16 (of 16)

Page 1 of 1

MARK ALL UPDATE MARKED LIST

Ranking is based on your journal and sort selections.

Mark	Rank	Abbreviated Journal Title <i>(linked to journal information)</i>	ISSN	JCR Data ⁱ				Eigenfactor TM Metrics ⁱ			
				Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-life	Eigenfactor TM Score	Article Influence TM Score
<input type="checkbox"/>	1	IEEE ROBOT AUTOM MAG	1070-9932	764	2.090	2.500	0.139	36	5.1	0.00300	0.776
<input type="checkbox"/>	2	IEEE T ROBOT	1552-3098	6904	2.035	2.877	0.161	137	10.0	0.01198	0.943
<input type="checkbox"/>	3	INT J ROBOT RES	0278-3649	3236	1.993	2.699	0.263	76	9.4	0.00682	0.967
<input type="checkbox"/>	4	J FIELD ROBOT	1556-4959	368	1.989	2.620	0.190	42	3.0	0.00194	0.682
<input type="checkbox"/>	5	ROBOT CIM-INT MANUF	0736-5845	1129	1.687	1.928	0.229	96	5.6	0.00312	0.490
<input type="checkbox"/>	6	BIOINSPIR BIOMIM	1748-3182	121	1.367	1.410	0.160	25	2.4	0.00113	0.652
<input type="checkbox"/>	7	ROBOT AUTON SYST	0921-8890	1526	1.361	1.650	0.130	115	6.5	0.00383	0.451
<input type="checkbox"/>	8	AUTON ROBOT	0929-5593	1215	1.235	2.080	0.175	40	7.5	0.00269	0.646
<input type="checkbox"/>	9	INT J HUM ROBOT	0219-8436	224	1.230		0.071	28	4.0	0.00120	
<input type="checkbox"/>	10	IND ROBOT	0143-991X	401	1.000	0.836	0.066	61	5.0	0.00108	0.190
<input type="checkbox"/>	11	ROBOTICA	0263-5747	912	0.992	1.117	0.146	96	6.5	0.00246	0.328
<input type="checkbox"/>	12	J BIONIC ENG	1672-6529	171	0.972		0.283	53	2.1	0.00086	
<input type="checkbox"/>	13	J INTELL ROBOT SYST	0921-0296	568	0.858	0.801	0.000	80	7.0	0.00140	0.234
<input type="checkbox"/>	14	ADV ROBOTICS	0169-1864	486	0.629	0.800	0.035	115	5.2	0.00162	0.229
<input type="checkbox"/>	15	INT J ROBOT AUTOM	0826-8185	144	0.339	0.438	0.029	35	7.1	0.00041	0.135
<input type="checkbox"/>	16	REV IBEROAM AUTOM IN	1697-7912	25	0.291		0.026	39		0.00012	

MARK ALL UPDATE MARKED LIST

Journal Rankings: JCR – Impact Factor

- Impact factor varies a lot between research fields, and between years
 - Examples of maximum IF:
 - » Robotics (2009): 2.090 ; (2010): 4.095
 - » Computer Science: Software Engineering (2009): 3.750
 - » Biology (2009): 12.916
- Better analyze the position within the subject category
 - » Example: Quartile Q2 in Biology
or Position 24/76 in Biology
- You may add other significant values
 - » Example: Position 3/76 in Cited Half-life in Biology
- Used as standard reference by most evaluation agencies in Spain: ANECA, ACPUA,...
 - For researcher accreditations and incentives
 - For institutional evaluations



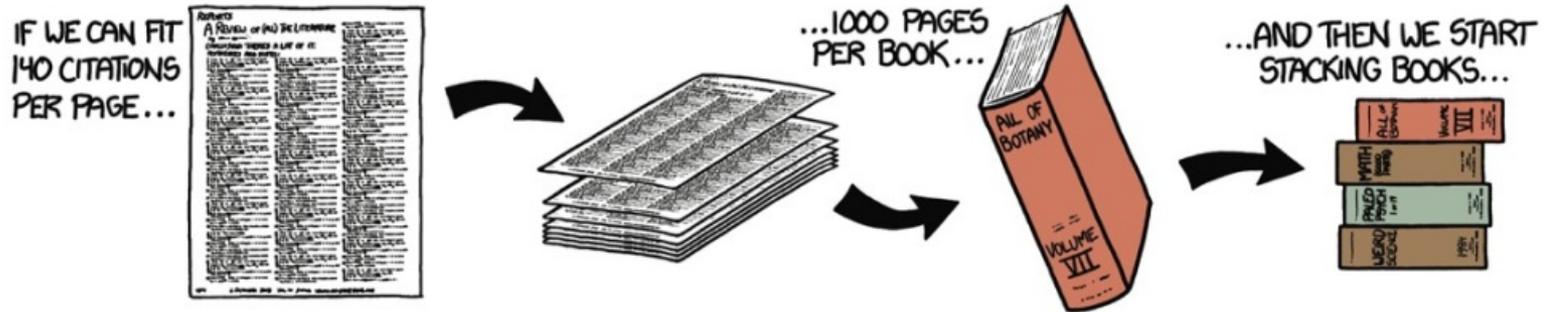
Other Journal Rankings

- Eigenfactor: <http://www.eigenfactor.org/>
 - Based on the PageRank algorithm used by Google to rank web pages
 - Imagine that a researcher goes to the library and selects a journal article at random. After reading the article, the researcher selects at random one of the citations from the article, proceeds to the journal that was cited, selects an article at random in that journal and repeats ad infinitum.
 - With probability $1-\alpha$ (typically $\alpha = 0.85$) the researcher gets bored and jumps to a random article.
 - The amount of time spent with each journal gives a measure of that journal's importance.
- SJR: SCImago Journal Rank <http://www.scimagojr.com/>
 - Also based on PageRank, with slightly different implementation details

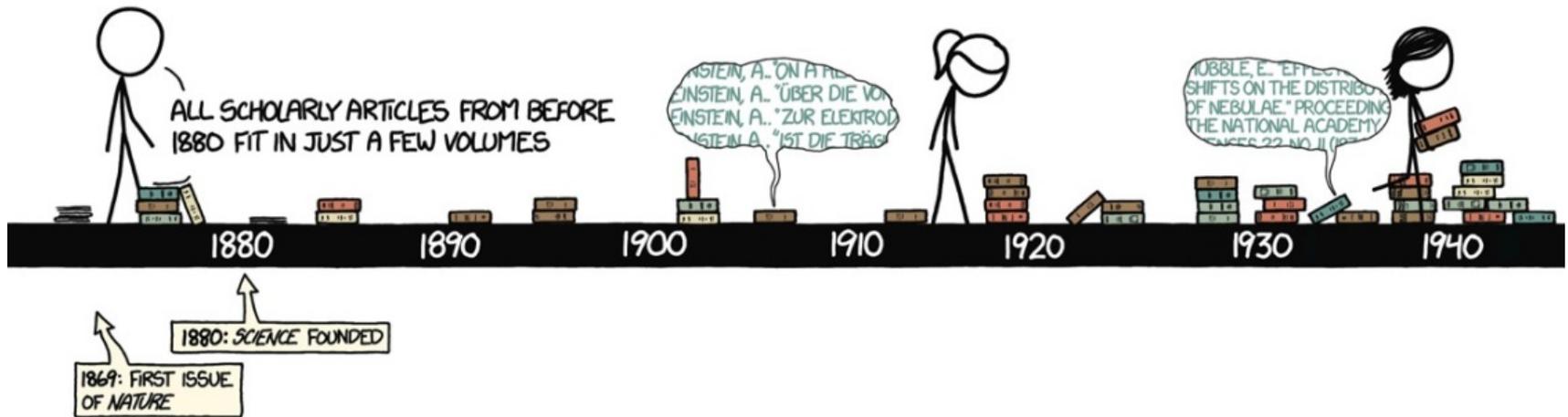


HOW MUCH SCIENCE IS THERE?

SCIENTIFIC PUBLISHING HAS BEEN ACCELERATING—A NEW PAPER IS NOW PUBLISHED ROUGHLY EVERY 20 SECONDS. LET'S IMAGINE A BIBLIOGRAPHY LISTING *EVERY* SCHOLARLY PAPER EVER WRITTEN. HOW LONG WOULD IT BE?

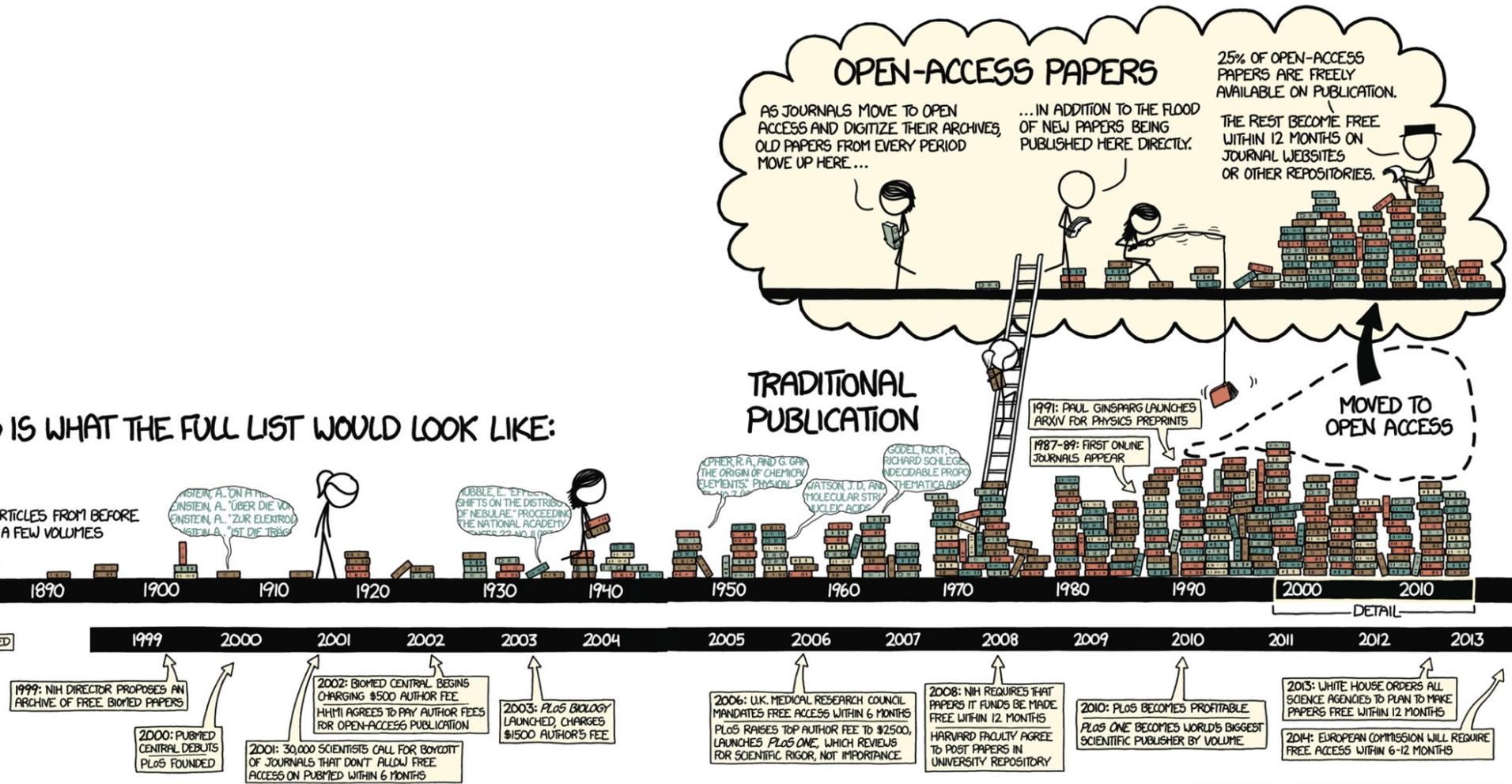


...THIS IS WHAT THE FULL LIST WOULD LOOK LIKE:



HOW OPEN IS IT?

SINCE THE ADVENT OF THE WEB, MUCH OF SCIENTIFIC PUBLISHING HAS BEEN MOVING TO **OPEN ACCESS**. ACCORDING TO SCIENCE-METRIX, OPEN ACCESS REACHED A "TIPPING POINT" AROUND 2011: MORE THAN 50% OF NEW RESEARCH IS NOW MADE AVAILABLE FREE ONLINE.



BY RANDALL MUNROE • REPORTING BY JOCELYN KAISER AND DAVID MALKOFF

Open Access Journals

Three schemes

- Open access journals
 - Don't charge readers for accessing the papers
 - Authors pay the cost of publishing
 - » Range: \$0 - \$5000 / paper
 - » Typical: \$300 - \$1200 / paper
- Mixed Journals
 - Charge readers for accessing the papers
 - But authors can pay to give free access to their papers
 - Example: most IEEE Transactions www.ieee.org/open-access
- Traditional Journals
 - Some allow to post on the author's website the **accepted** version of their papers, not the **final** version (ex: most IEEE Journals)
 - http://www.ieee.org/publications_standards/publications/rights/paperversionpolicy.html



Open Access Journals

- Scientific publishing is moving to open access
 - More than 50% of new research is available free online
 - US government 2013: all papers developed with public funds should be of free access in 12 months
 - EU Commission 2014: will require free access within 6-12 months
- Directory of Open Access Journals: <http://www.doaj.org/>
 - Lists OA journals with good practices
 - 10K journals in 2013
- Publish in OA journals?
 - Most offer very fast reviews
 - Some are junk: no serious review process
 - Some are scams: just trying to get author's money
 - If not ranked in JCR, forget about them!



Conference Rankings

- Spanish evaluation agencies tend to ignore conference papers, unless you proof they are exceptionally good
- SCImago Journal Rank includes some conferences, allowing to compare their impact with journals
- Computer science ranking:
 - <http://www.core.edu.au/>
 - » Ranks: A*, A, B, C
- If everything else fails, low acceptance rate ($\leq 30\%$) can be an (unreliable) indicator of conference quality

Further Information

- J. Freyne: Relative Status of Journal and Conference Publications in Computer Science, Communications of the ACM 53(11): 124-132, Nov 2010.
 - Emphasis in publishing in conference proceeding could hurt CS researchers in evaluations based on ISI web
 - Leading conference proceedings compare favorably to mid-ranking journals (comparing their impact with Google Scholar)
 - The commonly held view that conference rejection rates are a good proxy for conference quality did not hold up to scrutiny in this study.

4. How Much?

- In Spain, researchers are periodically evaluated:
 - “Acreditación” to get a lecturer or professor position
 - “Sexenios de investigación”: Salary incentives every 6-year
- Evaluation agencies:
 - CNEAI: Comisión Nacional Evaluadora de la Actividad Investigadora (Sexenios)
 - ANECA: Agencia Nacional de Evaluación de la Calidad y Acreditación (Acreditaciones)
 - ACPUA: Agencia de Calidad y Prospectiva Universitaria de Aragón (Acreditaciones)
 -

How are researchers evaluated?

- Publications is always the most important part
- “Acreditación” (ANECA), in technological areas:

	Ayudante Doctor	Contratado Doctor	Titular Universidad	Catedrático Universidad
Research Experience	60%	60%	50%	55%
- Publications	47%	37%	30-35%	30-37%
- Research Projects	9%	12%	7%	10%
- Patents & Know.Transfer		6%	4-9%	5-12%
- Other research activities	4%	5%	4%	3%
Teaching Experience	21%	30%	40%	35%
Academic Formation	14%	8%	5%	
Managing and Other	5%	2%	5%	10%
Acceptance Threshold	55%	55%	65%	80%
Typical # of JCR papers required in Technology **	2-3	4-6	6-10	12-20

**Estimated values, use them at your own risk

- » First value: number of **very good** JCRs: Q1 or highly cited
- » Last value: number of standard JCRs: Q2-Q4

How are researchers evaluated?

- Sexenios de Investigación (6-year periods):
 - Salary incentive based on a 6-year research period
 - If you miss one, it's gone forever
 - Used as requirement in many other places. Some examples:
 - » 1 to be PhD advisor or member in a PhD jury
 - » 2 to be member of an accreditation committee for Assoc. Prof.
 - » 3 to be member of an accreditation committee for Full Prof.
- Evaluation is mostly based on your 5 best results:
 - Should be 5 Patents or Articles in JCR journals in good positions
 - In technology, 2 good JCRs (Q1-Q2) + conferences is usually enough

How to measure author productivity?

- Quantity
 - Number of Publications
 - » But there are too many conferences and journals that nobody reads
 - Number of Publications in JCR Journals
 - » From 1989, when sexenios started, the number of JCR papers written in Spain has increased dramatically
 - » But their impact has not grown at the same pace
- Quality
 - Number of Publications in the best JCR Journals (Q1-Q2)
 - » But the IF measures the **average impact** of a journal, not the true impact of a paper or a researcher.

How to measure author impact?

- Number of Citations
 - A single paper with many citations does not reflect a sustained scientific production
 - Survey papers can easily distort the result
- H-index:
 - A h-index of ***h*** means that a researcher (or group of researchers) has published ***h* papers** that have **$\geq h$ citations each**
 - Does not favor neither prolific authors with low impact, nor isolated papers with many citations.
 - Adequate to compare researchers of the same age, institutions or countries, **within the same discipline**
 - Easy to obtain with SCI o Google Scholar (Very different values!)
 - » J.E. Hirsch: “An index to quantify an individual's scientific research output”, Proceedings of the National Academy of Sciences, vol. 102, no. 46, 16569–16572, November 15, 2005

How to have scientific impact?

- Work on an interesting problem
 - If nobody knows the problem, nobody will read about it
 - Try to find the “hot topics” in your research area
 - But it is harder: let a good idea sleep for 6 months, and there are good chances that someone else will publish it.
- Do good work
 - Don't get worried, get busy
 - Write down your results, a good report will become a good paper
 - Submit papers to good conferences and journals
 - Persevere, persevere, persevere
- Talk about it
 - Attend and present at good conferences. Discuss with people.
 - Do research stays in good labs. Write joint papers (6 months).



Country Ranking (SCImago, 1996-2013)

- Spain: #10 in number of Papers, #11 in Citations

	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1	United States	7.846.972	7.281.575	152.984.430	72.993.120	22,02	1.518
2	China	3.129.719	3.095.159	14.752.062	8.022.637	6,81	436
3	United Kingdom	2.141.375	1.932.907	37.450.384	8.829.739	19,82	934
4	Germany	1.983.270	1.876.342	30.644.118	7.966.777	17,39	815
5	Japan	1.929.402	1.874.277	23.633.462	6.832.173	13,01	694
6	France	1.421.190	1.348.769	21.193.343	4.815.333	16,85	742
7	Canada	1.110.886	1.040.413	18.826.873	3.580.695	20,05	725
8	Italy	1.083.546	1.015.410	15.317.599	3.570.431	16,45	654
9	India	868.719	825.025	5.666.045	1.957.907	8,83	341
10	Spain	857.158	800.214	10.584.940	2.629.669	15,08	531
11	Australia	782.149	723.460	11.447.009	2.449.459	18,24	583
12	South Korea	658.602	642.983	5.770.844	1.281.366	11,49	375
13	Russian Federation	639.598	629.671	3.664.726	1.088.981	6,00	355
14	Netherlands	614.552	574.144	12.103.482	2.003.644	23,03	636
15	Brazil	529.841	510.194	4.164.813	1.415.014	10,98	342
16	Taiwan	446.282	434.662	3.993.380	930.383	11,35	300
17	Switzerland	445.163	419.372	9.238.679	1.261.471	24,53	629
18	Sweden	417.156	397.095	8.069.960	1.267.282	21,76	567
19	Poland	387.982	378.483	2.939.536	768.212	8,93	336
20	Turkey	348.836	330.411	2.417.631	624.695	9,07	237



Country Ranking (SCImago, 1996-2013)

- Spain-Computer Science: #10 in Papers, #11 in Citations

	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1	 United States	674.876	660.385	6.863.682	2.098.285	12,10	588
2	 China	533.724	530.256	1.195.832	570.771	3,90	189
3	 Japan	170.877	168.377	645.155	166.574	4,79	171
4	 Germany	170.090	166.330	1.039.985	218.161	8,54	235
5	 United Kingdom	159.312	154.399	1.269.899	231.099	10,47	267
6	 France	132.068	129.571	823.842	183.243	8,82	224
7	 Canada	110.523	107.989	859.973	128.162	10,32	233
8	 Italy	98.727	96.022	628.951	140.139	8,78	194
9	 South Korea	92.957	91.526	394.934	68.034	6,17	146
10	 Spain	84.041	82.127	434.934	108.506	7,97	161
11	 Taiwan	83.238	81.978	457.728	109.171	8,14	155
12	 India	80.013	79.018	283.005	49.560	7,55	132
13	 Australia	69.835	67.978	443.081	61.258	9,53	177
14	 Netherlands	49.674	48.229	414.325	61.569	11,73	187
15	 Singapore	35.950	35.210	263.852	30.829	9,37	139
16	 Brazil	35.778	35.064	138.660	30.311	6,21	106
17	 Hong Kong	35.287	34.465	326.640	35.334	11,34	162
18	 Russian Federation	35.122	34.921	78.095	14.900	2,31	79
19	 Switzerland	33.448	32.550	334.256	37.482	14,21	181
20	 Poland	33.347	32.793	128.336	33.507	5,61	95



Country Ranking (SCImago, 1996-2013)

- Spain: #20 in Citations per Paper: avg = 15,08

	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1	Switzerland	445.163	419.372	9.238.679	1.261.471	24,53	629
2	Denmark	234.852	221.544	4.653.794	670.279	23,38	476
3	Netherlands	614.552	574.144	12.103.482	2.003.644	23,03	636
4	United States	7.846.972	7.281.575	152.984.430	72.993.120	22,02	1.518
5	Sweden	417.156	397.095	8.069.960	1.267.282	21,76	567
6	Canada	1.110.886	1.040.413	18.826.873	3.580.695	20,05	725
7	Finland	212.195	204.004	3.677.439	583.752	19,94	407
8	United Kingdom	2.141.375	1.932.907	37.450.384	8.829.739	19,82	934
9	Belgium	335.160	316.462	5.658.300	820.146	19,68	502
10	Israel	247.561	234.696	4.346.150	607.046	19,29	456
11	Norway	183.463	172.258	2.802.491	452.749	18,83	362
12	Australia	782.149	723.460	11.447.009	2.449.459	18,24	583
13	Austria	241.610	227.014	3.668.207	505.720	18,04	416
14	Ireland	119.983	111.434	1.647.369	196.295	17,85	299
15	Germany	1.983.270	1.876.342	30.644.118	7.966.777	17,39	815
16	New Zealand	146.264	135.988	2.084.166	327.237	17,20	318
17	France	1.421.190	1.348.769	21.193.343	4.815.333	16,85	742
18	Italy	1.083.546	1.015.410	15.317.599	3.570.431	16,45	654
19	Hong Kong	180.958	172.610	2.448.025	340.370	15,53	325
20	Spain	857.158	800.214	10.584.940	2.629.669	15,08	531

Country Ranking (SCImago, 1996-2013)

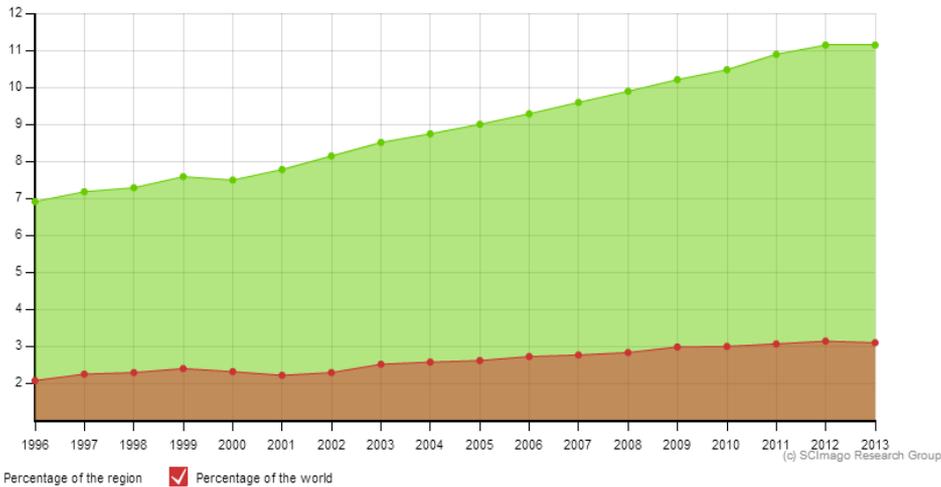
- Spain-Computer Science: #24 in Cites/Paper: 7,97

	Country	Documents	Citable documents	Citations	Self-Citations	Citations per Document	H index
1	Switzerland	33.448	32.550	334.256	37.482	14,21	181
2	Israel	26.630	26.131	288.961	37.453	13,54	177
3	Belgium	28.221	27.582	242.671	32.611	12,34	153
4	United States	674.876	660.385	6.863.682	2.098.285	12,10	588
5	Denmark	16.319	15.812	125.395	15.172	11,78	121
6	Sweden	30.412	29.838	250.308	31.667	11,78	142
7	Netherlands	49.674	48.229	414.325	61.569	11,73	187
8	Hong Kong	35.287	34.465	326.640	35.334	11,34	162
9	Austria	25.333	24.574	158.461	24.469	10,89	119
10	United Kingdom	159.312	154.399	1.269.899	231.099	10,47	267
11	Canada	110.523	107.989	859.973	128.162	10,32	233
12	Australia	69.835	67.978	443.081	61.258	9,53	177
13	New Zealand	11.174	10.895	67.037	7.874	9,52	95
14	Norway	14.037	13.642	84.156	12.481	9,46	96
15	Singapore	35.950	35.210	263.852	30.829	9,37	139
16	Finland	25.259	24.826	159.641	24.387	9,37	124
17	France	132.068	129.571	823.842	183.243	8,82	224
18	Italy	98.727	96.022	628.951	140.139	8,78	194
19	Turkey	22.979	22.597	135.249	23.776	8,67	102
20	Ireland	14.400	14.044	81.543	8.671	8,64	92
21	Germany	170.090	166.330	1.039.985	218.161	8,54	235
22	Taiwan	83.238	81.978	457.728	109.171	8,14	155
23	Greece	28.451	27.567	162.400	28.379	8,09	112
24	Spain	84.041	82.127	434.934	108.506	7,97	161
25	India	80.013	79.018	283.005	49.560	7,55	132

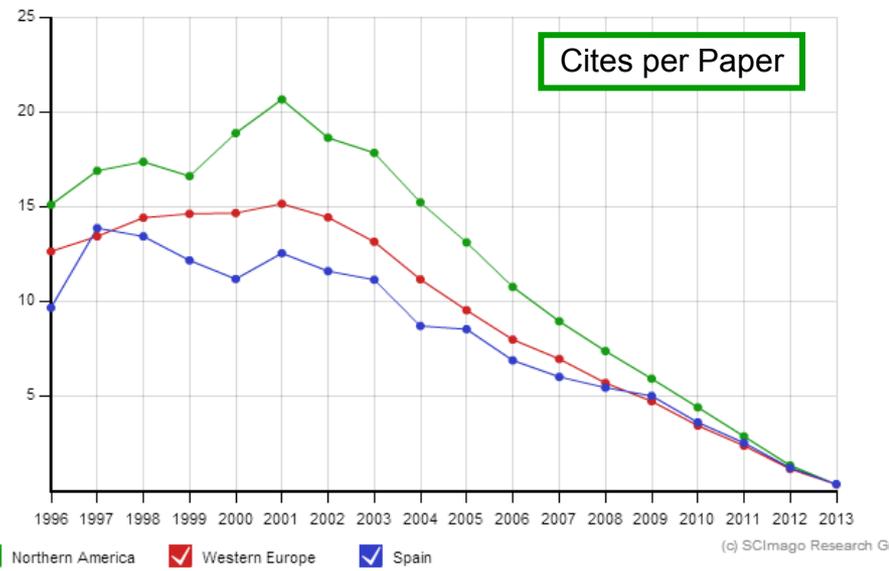
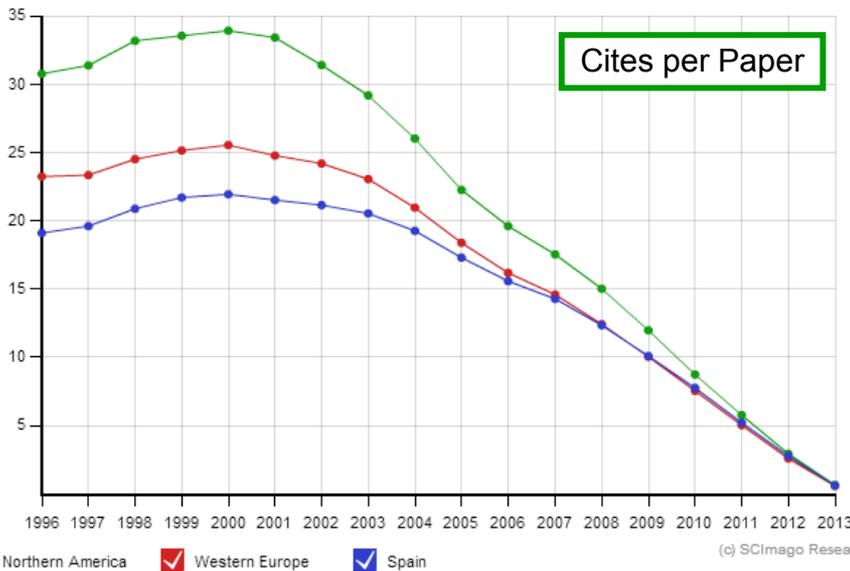
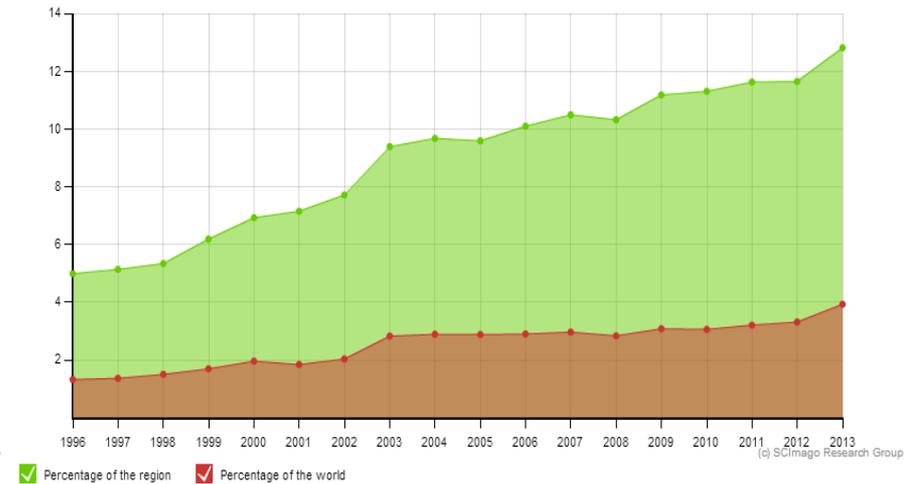
Country Ranking (SCImago, 1996-2013)

- Scientific production in Spain: left: all areas, right: Comp.Science

Relative Production



Relative Production



Shanghai University Ranking (2014)

Ranking Metodología Estadística					
Rank Mundial	Institución*	País/Región	Rank Nacional	Puntuación Total	Puntuación en Alumni ▼
1	Universidad de Harvard		1	100	100
2	Universidad de Stanford		2	72.1	41.8
3	Instituto de Tecnología de Massachusetts		3	70.5	68.4
4	Universidad de California-Berkeley		4	70.1	66.8
5	Universidad de Cambridge		1	69.2	79.1
6	Universidad de Princeton		5	60.7	52.1
7	Instituto de Tecnología de California		6	60.5	48.5
8	Universidad de Columbia		7	59.6	65.1
9	Universidad de Chicago		8	57.4	61.4
9	Universidad de Oxford		2	57.4	51
11	Universidad de Yale		9	55.2	48.8
12	Universidad de California, Los Ángeles		10	51.9	30.2
13	Universidad de Cornell		11	50.6	37.6
14	Universidad de California, San Diego		12	49.3	19.7
15	Universidad de Washington		13	48.1	21.7
401-500	Universidad de Zaragoza		9-12		0

Juan D. Tardós, University of Zaragoza, Spain



Shanghai University Ranking (2014)

Matemáticas Física Química Computación Económica Metodología Estadística				
Rank Mundial	Institución*	País/Región	Puntuación Total	Puntuación en Alumni ▼
1	Universidad de California-Berkeley		100	94.3
2	Universidad de Harvard		96.5	100
3	Universidad de Stanford		95.8	57.7
4	Universidad del Noroeste		84.6	0
5	Universidad de Cambridge		83.4	66.7
6	Instituto de Tecnología de Massachusetts		82.9	0
7	Instituto de Tecnología de California		80.8	0
8	Instituto Federal Suizo de Tecnología de Zúrich		77	33.3
9	Universidad de Kioto		76.9	33.3
10	Universidad de California, Los Ángeles		72.9	0
11	Universidad de Pennsylvania		72	57.7
12	Universidad de Yale		70.3	57.7
13	Universidad de California, Santa Bárbara		70.1	0
14	Universidad de Oxford		67.7	33.3
15	Universidad de Columbia		67.6	47.1
76-100	Universidad de Zaragoza			0



Shanghai University Ranking (2014)

Matemáticas Física Química Computación Económica Metodología Estadística				
Rank Mundial	Institución*	País/Región	Puntuación Total	Puntuación en Alumni ▼
1	Universidad de Stanford		100	75.6
2	Instituto de Tecnología de Massachusetts		96.8	37.8
3	Universidad de California-Berkeley		88.7	100
4	Universidad de Harvard		81.5	75.6
5	Universidad de Princeton		77.7	37.8
6	Universidad de Texas en Austin		73.1	37.8
7	Universidad Carnegie Mellon		72.6	37.8
8	Universidad de Cornell		70.1	37.8
9	Universidad de California, Los Ángeles		69.3	37.8
10	Universidad de Toronto		63.7	0
11	Universidad de California, San Diego		63.4	0
11	Universidad del Sur de California		63.4	0
13	Instituto de Tecnología de California		62.8	37.8
14	Universidad de Illinois en Urbana-Champaign		62.1	37.8
15	Instituto Federal Suizo de Tecnología de Zúrich		61.8	0
151-200	Universidad de Zaragoza			0



Shanghai University Ranking (2014)

Criterios, Indicadores y sus Valores del Ranking

Criterio	Indicador	Código	Valor
Calidad de la Docencia	Antiguos alumnos de una institución con premios Nobel y medallas Fields	Alumni	10%
Calidad del Profesorado	Profesores de una institución que han obtenido premios Nobel y medallas Fields	Award	20%
	Investigadores con alto índice de citación en diversas materias	HiCi	20%
Producción Investigadora	Artículos publicados en Nature y Science	N&S*	20%
	Artículos indexados en Science Citation Index - Expanded y Social Science Citation Index	PUB	20%
Rendimiento per Cápita	Rendimiento académico per cápita de una institución	PCP	10%
* Para instituciones especializadas en Humanidades y Ciencias Sociales, no se considera el criterio N&S y el valor se redistribuye entre los demás indicadores de forma proporcional.			

<http://www.shanghairanking.com/es/index.html>

5. Useful tools

- ISI Web of Knowledge: <http://www.accesowok.fecyt.es/>
 - Access paid by Spanish Ministry of Science
 - Covers mainly papers and citations in JCR journals.
 - » Also includes some other journals and some conferences
 - Web of Science / Science Citation Index
 - » Find papers by author, journal, years,...
 - » Citations, h-index
 - Journal Citation reports
 - » Analyze journal Impact by title or category

Useful tools

- Google Scholar: <http://scholar.google.es/>
 - Free access
 - Covers journals, conferences and other web documents
 - Very useful to:
 - » Find papers by author, publication, years,...
 - » Find citations and h-index
 - » Find papers containing certain words or phrases
 - In the title
 - Inside the paper
 - » **Download the papers!!**



Useful tools

- Publish or Perish: <http://www.harzing.com/pop.htm>
 - Free program, front-end to access Google scholar data
 - Same coverage than Google Scholar
 - In addition, very useful to:
 - » Obtain and compare the production of several researchers, total citations, h-index, and several other metrics.

Useful tools

- SCImago: <http://www.scimago.es/>
 - Free access
 - Based on Scopus citations database (not free)
 - Covers journals and some good conferences
 - Very useful to:
 - » Compare journal impact using SJR (based on PageRank)
 - » Compare scientific production by countries or regions
 - » Institution rankings by scientific production

Useful tools

- MS Academic: <http://academic.research.microsoft.com/>
 - Free access
 - Tries to compete against Google Scholar, but less coverage
 - Still quite unreliable
 - Useful to:
 - » Draw nice graphs (co-authors, citations,...)
 - » Compare scientific production by institutions
 - » Reading the **context of each citation**

How to find quality indicators

- For Journal papers:
 - Use ISI web: JCR & Science Citation Index
 - Add Google Scholar citations
 - Relative ranking (Q1 or 13/512) is better than absolute $IF=0.9$
- For conference papers
 - Search in conference rankings
 - Find citations in ISI web and Google Scholar
 - For recent papers obtain citations/year

Examples - Journals (data of Nov-2010)

- Ilarri S., Mena E., Illarramendi A.: Location-dependent query processing: Where we are and where we are heading, ACM Computing Surveys, 42(3):1-73, Mar 2010
 - JCR Journal, position 1/92 in Computer Science, Theory & Methods, IF = 7.667
 - 1 citation in Google Scholar (excluding self-citations)
- Civera J., Davison A.J., Magallón J.A. and Montiel J.M.M.: Drift-free real-time sequential mosaicing, Int. Journal of Computer Vision, 81(2): 128-137, Feb 2009
 - JCR Journal, position 4/103 in Computer Science, Artificial Intelligence, IF = 3.507
 - 8 citations in Google Scholar (excluding self-citations)
- Gutiérrez D., Serón F.J., López-Moreno J., Sánchez M.P., Fandos J., Reinhard E.: Depicting procedural caustics in single images, ACM Transactions on Graphics, 27(5), Dec 2008
 - JCR Journal, position 2/93 in Computer Science, Software Engineering, IF = 3.619,
 - 1 citation in ISI web (excluding self-citations)
- Ezpeleta J, Tricas F, Garcia-Valles F, Colom J.M. : A banker's solution for deadlock avoidance in FMS with flexible routing and multiresource states, IEEE Trans. on Robotics and Automation 18(4): 621-625, Aug 2002
 - JCR Journal, position 11/49 in Automation and Control Systems, IF = 1.048 (year 2002)
 - 39 citations in ISI web (average of 4.33 citations/year)

Examples - Conferences (data of Nov-2010)

- Civera, J., Grasa O.G., Davison A.J., Montiel JMM : 1-point RANSAC for EKF-based structure from motion, IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS 2009, pages 3498-3504.
 - 12 citations in Google Scholar (average of 6 citations/year)
- Laura A. Clemente, Andrew Davison, Ian Reid, José Neira, Juan D. Tardós, Mapping Large Loops with a Single Hand-Held Camera, Robotics Science and Systems, Atlanta, GA, USA , June 2007
 - Conference ranked A* in <http://www.core.edu.au/>
 - 102 citations in Google Scholar (average of 25.5 citations/year)
- Fabra, J; Alvarez, P; Banares, JA; Ezpeleta, J:: A framework for the development and execution of horizontal Protocols in open BPM systems, Proceeding of Business Process Management, 4102: 209-224, 2006
 - Conference ranked A in <http://www.core.edu.au/>
 - 12 citations in Google Scholar (average of 2.40 citations/year)

Assignment #1

- Find the best journals and conferences in your area of interest
 - If you still don't have a defined research field, select the research line of your Department that you find more attractive.
<http://webdiis.unizar.es/POPinformatica/doctorado/lineas.htm>
- For Journals: find the IF and the SJR. For the best ones, try to find their orientation: surveys, incremental, ground-breaking, theoretical, applications, system papers?,...
- For Conferences: find their position in conference rankings, acceptance ratio, orientation, periodicity, the next deadline and the next location.
- Build a summary table and stick it close to your desk

Assignment #2

- Try to find the most influential works and the “hot topics” in your area of interest
- What researchers and labs are more active and more relevant?

Take-Home Messages

- Don't forget that reason #1 for publishing is contributing to the advance of knowledge
- Researcher evaluation is heavily based on publications and patents
- Current trends seem to be:
 - Value paper quality instead of quantity
 - Value patents and knowledge transfer
- Before publishing, think about patenting it
- Submit to the best conferences and journals you can
- Know your research field
 - Read many good papers
 - Learn how to use the available tools



Next Talk (next week, same hour)

Publish or Perish, Part II: How?

1. The publishing process
2. How to write a paper?
3. How to write a review?
4. How to write a rebuttal?
5. Ethical Issues
 - Authorship, Plagiarism, Salami slicing, Conflicts of interest,...