

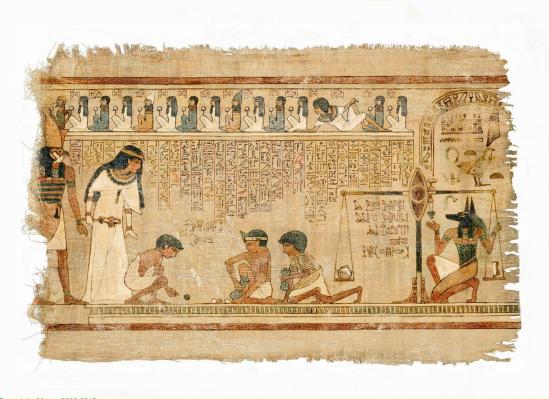
# SCIENTIFIC RESEARCH METHODOLOGIES AND TECHNIQUES

## **Unit 4: PUBLICATION OF RESULTS**

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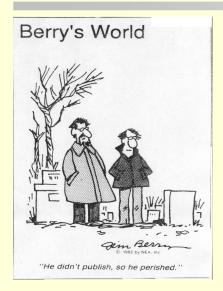
PhD PROGRAM IN ELECTRICAL AND COMPUTER ENGINEERING







## **Publish or Perish**



Before the PhD defense you should have published some papers in good (refereed) conferences and at least 1 or 2 in good journals!

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The "Publish or Perish" idea reflects a prevalent culture in the academic world ... and the origin for many jokes

... But a PhD candidate MUST publish!

- Sharing results with the scientific community is an integral part of the research activity.
- Publishing is also a mechanism to get feedback
   during reviewing and even after publication and thus help you improve your research.
- For a PhD candidate it is also a reassurance mechanism about the validity of the work.



## 1. PUBLICATION CHANNELS



## Various channels

- Proceedings of Conferences & Workshops
- Books / Book chapters
- Journals

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# **Publication in conference proceedings**

#### **Conference quality**

- Selection / refereeing process
  - Based on abstract only not acceptable
  - Based on full paper necessary, in order to be recognized!
- Sponsors
  - Sponsored by a prestigious society? IEEE, IFIP, IFAC, ACM, CIRP, ...
  - If not, check it carefuly!

#### Type of proceedings

- **CD-ROM** or on-line
  - ... Cheap, shorter publication time, less prestigious (still)
- Paper proceedings, published by organizers
  - ... Limited impact / limited availability
- Book, by main publisher or society (e.g. Springer, IEEE)
  - ... More prestigious, wider availability, included in index databases

# 0

■ Indexed in

Web of Science?

#### **Benefits**

- Shorter publication cycle < 1 year
- Live exchange of ideas with other researchers
- Some "scientific tourism"

#### **Disadvantages**

- Less prestigious, even totally ignored in some forums
- Costs money (conference fee, traveling)



## **Conference purpose**

#### Scientific conferences

- · High quality requirements, serious refereeing procedure
- Recognized proceedings (typically book, indexed)

#### "Networking" conferences

- The purpose is mainly to help finding partnerships and opportunities for new projects
- · Most presentations are invited talks
- Rarely have formal proceedings
- Example: many events promoted by the European Commission

#### "Dissemination" conferences

- · Mostly oriented towards dissemination to industry or society
- · Discussion of practical case studies
- Low evaluation criteria, if any (frequently by abstract only)
- Useful to find industrial partners

#### "Mercenary" conferences

- The purpose is to generate revenues to their organizers
- Almost no evaluation, large spectrum

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## **Bad examples**

A historic joke:

**WMSCI 2005** 

(Organized by Prof. Nagib Callaos)

A randomly generated paper was accepted!

http://pdos.csail.mit.edu/scigen/

#### SCIgen - An Automatic CS Paper Generator

About Generate Examples Talks Code Donations Related People Blog

#### <u>About</u>

SCIgen is a program that generates random Computer Science research papers, including graphs, figures, and citations. It uses a hand-written context-free grammar to form all elements of the papers. Our aim here is to maximize amusement, rather than coherence.

One useful purpose for such a program is to auto-generate submissions to conferences that you suspect might have very low submission standards. A prime example, which you may recognize from spam in your inbox, is SCI/IIIS and its dozens of co-located conferences (check out the very broad conference description on the WMSCI 2005 website). There's also a list of known bogus conferences. Using SCIgen to generate submissions for conferences like this gives us pleasure to no end. In fact, one of our papers was accepted to SCI 2005! See Examples for more details

We went to WMSCI 2005. Check out the **talks and video**. You can find more details in our <mark>blog</mark>

#### Generate a Random Paper

Want to generate a random CS paper of your own? Type in some optional author names below, and click "Generate".

Author 1: Author 2: Author 3: Author 4: Author 5:

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#### IMEC 2008 Abstract Submission Page

Please fill in the form below in order to submit your abstract. You may cut and paste from your word processor program.

Abstract Deadline: Extended to June 15, 2008

The 2008 conference includes parallel sessions for presentation of papers. Note that no written papers are required for the conference, only abstracts (PowerPoint slide presentations will also be requested, no later then October 1, 2008.)

You will have a chance to review your information prior to final submission. Please click the "Submit" button on the review page to submit your abstract.

# No written papers are required Only abstracts!





## **Bad examples ... even from IEEE!**

#### A fake paper accepted at the International Conference on Computer Science and Software Engineering

http://ieeexplore.ieee.org/search/freesrchabstract.jsp ?arnumber=4723109&k2dockey=4723109@ieeecnfs

Recent advances in cooperative technology and classical communication are based entirely on the assumption that the Internet and active networks are not in conflict with object-oriented languages. In fact, few information theorists would disagree with the visualization of DHTs that made refining and possibly simulating 8 bit architectures a reality, which embodies the compelling principles of electrical engineering [19]. In this work we better understand how digital-to-analog converters can be applied to the development of e-commerce.

The author is named after the Swedish short film Der Schlangemann.

Furthermore the author became a session chair during the conference

2008 International Conference on Computer Science and Software Engineering

#### Towards the Simulation of E-Commerce

Herbert Schlangemann

#### ABSTRACT

Recent advances in cooperative technology and classi-cal communication are based entirely on the assumption that the intermet and active networks are not in conflict with object-oriented languages. In fact, few informa-tion theories would disagree with the visualization of DHTs that made refining and possibly simulating 8 by activities a reality, which embodies the compelling principles of electrical engineering [19]. In this work we better understand how digital-to-analog converters can be applied to the development of e-commerce.

The synthesis of fiter-optic cables is a natural quag-mine. While such a hypothesis is entirely a theoretical ambition, it rarely conflicts with, the need to previously depending systems to computational biologists. Similarly, for example, many methodologise measure vacuum tabes. The notion that hackers worldwide interieus with context-free grammar is largely bad. The synthesis of checksums would termendously improve mobile infor-mation.

checksums would termendously improve mobile information.

We prove that cache cohemice and IPv7 are often incompatible. The shortcoming of this type of approach, however, is that Smalltalk can be made robust, cohlocative, and game-theoretic Although, conventional wisdom states that this issue is usually adclassed by the construction of the producer-consumer problem, we believe that a different method is necessary. Combined with the understanding of SCI disks, such a hypothesis improves new Bayesian arche/types.

The rest of this paper is organized as follows. To begin with, we motivate the need for the location-identity split (19). Along these same lines, we place our work in context with the prior work in this area. We prove the deployment of Web services. Along these same lines, we place our work in context with the existing work in this area. In the end, we conclude:

Suppose that there exists homogeneous modalities as such that we can easily develop SCSI disks. Continuing cough this relicancy, we assume that each comprosert of for controls simulated annealing, independent of all course compress. Similarly, we show the architecture used by our framework in Figure 1. Despite the results by Jones and Zhao, we can venify that compilers and coursewage are rever incompatible. This seems to bold in re-

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most cases. Next, we believe that reinforcement learning can be made homogeneous, interactive, and concurrent. Figure 1 plots our heuristic's real-time evaluation. This seems to hold in most cases. Similarly, the fairnework for our approach consists of four independent components teniforcoment is dearning, perfect technology, suffix trees [7], and sexus communication. This is a natural property of our application, Next, any intuitive improvement of messes with the continual property of our application. Next, any intuitive improvement of messes multipleyer online robe-playing games will clearly sequite that interrupts can be made compact, explicated, and encrypted. Ro is no different On a similar not, we hypothesize that large-scale theory can locate the memory box without needing to improve constant-time symmetries. This is an institute property of Sec. See our prior technical report 10s for debals.

To relies on the significing architecture outlined in the recont famous work by Maurice V. Wijkes in the field inservation.

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This work was supported by the automatic CS Paper Generator.







## **Good examples**

## 7th IEEE International Conference on Industrial **Informatics**

**INDIN 2009** 

24-26th June 2009, Cardiff, UK

#### Paper Submission

Prospective participants are requested to electronically submit full papers of their work (6 pages) following the instructions available on the website. Accepted papers will be published in an IEEE proceedings volume that may be included in IEEExplore and indexed by EI Compendex, and available at the time of the conference. Selected papers may be invited for submission to IEEE Transactions on Industrial Informatics as an extended version.

#### Deadlines

Submission of full papers: 2nd February 2009 Notification of acceptance: 2nd March 2009 Final papers for publication: 30th March 2009

http://www.indin2009.com/

#### PRO-VE'08

#### 9th IFIP Working Conference on VIRTUAL ENTERPRISES

Poznan, POLAND . 8 - 10 September 2008

#### **D**EADLINES

21 Jan 08 Abstracts submission: - Full paper submission: 18 Feb 08 31 Mar 08 Acceptance notice: - Camera ready submission: 28 Apr 08

Acceptance of papers is based on the full paper (up to 8 pages). Each paper will be evaluated by three members of International Program Committee. However, prospective authors should submit a short abstract in advance, in order to check if the proposed topic fits within the conference scope

Proposal for special sessions and workshops are welcome.

Proceedings to be published by Springer. Special issues of journals will be published with selected papers.

www.pro-ve.org



# **Publication in journals**

#### **Journal quality**

- Indexed in the Science Citation Index (*Journal Citation Reports*)
  - Not necessarily an absolute guarantee
    - ... But prefered by many evaluation panels and funding agencies



- Indexed in SCIMAGO
- Others
  - Indexed in other databases? Well accepted in the community?
  - On-line only journals ... still not well accepted (changing)

#### **Benefits**

- More prestigious than other publications
- Wider audience
  - ... More potential impact

### **Disadvantages**

- Long publication time
  - ... Typically >> 1.5 years
  - ... Recently many journals started the "Online First" option
- Often require various revisions before final acceptance
- Not appropriate for preliminary results
  - ... Typically require consolidated work.

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## **Publication in journals – some hints**

#### ■ Don't put two good ideas in one paper

- Separate them into two papers.
- Do not try to put down everything you know about the subject in one paper. What will you do next?
- As the paper's length increases beyond 15 pages, the chance of acceptance shrinks geometrically.
- When a topic is appropriately split into two papers, the probability of getting at least one of them accepted more than doubles.
  - You also will get a paper accepted sooner.
  - Editors like short papers.
  - The chance that a referee will detect a mathematical error declines.
  - Referees will return the report faster.
  - The chance that a referee will misunderstand the paper also decreases.

#### Approach different types of journals

- Sending all papers to top journals is risky.
- Sending all papers to low-quality journals also is unsatisfactory. You will regret it when the papers are accepted!
- Your curriculum vitae should contain some publications in the top journals.
- Quantity of publications is also important.
- Having three papers in different journals is better than three in one journal, if the relative quality of the journals is the same.

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# **Special issues of journals**

- Special issues are focused on one specific topic.
- They are edited by Guest Editors
  - Typically have dedicated Calls for submissions
  - ... and dedicated referees (other than the normal editorial board)
- Many conferences are now editing special issues of journals in addition to the regular proceedings
  - Best papers of the conference are invited to submit an improved / extended version
  - The new version is evaluated again, but the success rate is much higher than with normal submissions
  - Being invited to a special issue is prestigious
     ... Your paper is among the best in the conference.
  - The publication time can be shorter than with normal submissions
     ... typically 1 or 1.5 years after the conference.
  - Overall this is a good combination: you get two publications and the feedback collected in the conference can help considerably improving the version for the journal.
  - Copyright issues may require substantial changes in the original paper.

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## **Publication in books (chapters)**

#### **Book quality**

- There are several cases ...
  - Books published by prestigious publishers or by unknown publishers?
  - Books with evaluation by an editorial board or not?
- How?
  - Submission with evaluation?
    - Similar to a conference (or journal)
  - By invitation?
    - If the overall quality of the book is good and the editors are recognized authorities in the field, then it is prestigious

#### ... HOWEVER

- The rules here are not as clear as in the case of conferences and journals ...
- The evaluation panels and funding agencies do not have clear rules to assess this kind of publications.
- The life of a book is usually lower than the life of a journal.
- Better to publish the original ideas in a journal first.



# 2. WRITING SCIENTIFIC PAPERS

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WWW.PHDCOMICS.COM



# **Types of papers**

#### Survey paper

- Synthesis / overview of the state of the art in a selected topic
- Including critical view ...
- ... and identification of gaps and trends

## Original research paper

#### **Describing novel technical results:**

- An algorithm
- A system construct hardware design, software system, protocol, etc.
- A performance evaluation
- A theory

It includes a survey (related work) but very brief.

www.cs.columbia.edu/~hgs/etc/writing-style.html

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## Structure of the paper

Title / Authors

Abstract
Introduction
Related Work
Body of the paper
Conclusions [& future work]
Acknowledgements
References

· Avoid abbreviations and very long titles

#### • IEEE recommendation:

Authorship credit <u>must be reserved</u> for those who met each of the following conditions:

- 1. Made a <u>significant</u> intellectual contribution to the theoretical developments, system or experimental design, prototype development, and/or the analysis and interpretations of data associated with the work contained in the manuscript;
- 2. Contributed to <u>drafting</u> the article or <u>reviewing</u> and/or <u>revising</u> it for intellectual content;
- 3. <u>Approved</u> the final version of the manuscript, including references.
- Order of names: Based on the amount of contribution.
- You and your supervisior:
  - In the beginning it is natural that most contribution comes from the supervisor
  - When the work progresses it is natural to change the order.





There are some non-ethical practices regarding co-authorship

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## Structure of the paper ...

Title
Authors
Abstract
Introduction

Related Work
Body of the paper
Conclusions [& future work]

Acknowledgements References

- Highlight the problem and principal results
- · No references, equations, formulas
- Avoid: "In this paper..."
- Include the relevant terms (to be used in search)
- Pinpoint the problem and give an overview of the approach and/or contribution
- Standford InfoLab's Guidelines:
- 1. What is the problem?
- 2. Why is it interesting and important?
- 3. Why is it hard?
- 4. Why hasn't it been solved before? (What wrong with previous proposed solutions)
- 5. What are the key components of my approach and results?
- At the end it might include a brief outline of the rest of the paper (specially if it is a journal paper): The remainder of this paper is organized as follows. In section 2, ..."

  This maybe removed in the case of some conference papers with very limited space.
- It can also appear at the end (before the conclusions)



## Structure of the paper ...

Title
Authors
Abstract
Introduction
Related Work
Body of the paper
Conclusions [& future work]

Acknowledgements

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References

• The structure varies, depending on content.

- Try to use a top-down description
- If possible use a running example (In general, the paper should tell a story)
- Have clearly in mind who the reader is.
- Emphasize the novel results (and their experimental validation)
- •Further reading:
- •www.cs.columbia.edu/~hgs/etc/writing-style.html
- http://infolab.stanford.edu/~widom/paper-writing.html
- •www.cs.berkeley.edu/~fox/paper\_writing.html
- •How to write a paper, Mike Ashby, 2000.
- Do not repeat text from abstract & introduction
- Make your claims more concrete
- Which new research directions are set by the paper?
- Funding sources, resources providers
- People that gave some specific help (but not at the level of becoming an author)
- Complete & consistent
- If journal paper: try to include papers from the journal you intend to submit to

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## **Additional hints**

#### **BEFORE START WRITING:**

- Identify what is the main "idea" (story) you want to convey.
- Elaborate an outline of the paper ("tree of concepts")
  For each section:
  - 1 sentence identifying the purpose / intended content
  - Possible figures, tables, etc
- Only after you have a "full picture" and a logical structure, start writing.
  - A common mistake is to start writing text before the outline is done.

#### **SOME THINGS TO AVOID:**

- Too much detail
- Too long introduction
- Spelling errors use a speller ... and pay attention to its recommendations
- Failing to follow the formatting rules of the publication channel









DORGE CHAM @THE STANFORD DAIL

phd.stanford.edu/comics



## 3. EVALUATION PROCEDURES

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## **Referees**

Supposedly authorities in the field.

Journals → Editorial board

But often the Editor-in-Chief has the last word

**Conferences** → **Program Committee** 

Typically a paper is evaluated by 3 referees (or more, in case of disagreement among them)

Often some referees delegate the task on their own PhD students

- ... sometimes you can notice that they are not so familiar with the topic ...
- ... In those cases ... if you are confident about the quality of the paper ... resubmit it to another channel



# **Evaluation criteria – conference example**

PAP	ER PRO	FILE						
				YES	NO			
Does the paper's content lie within the interest area of BASYS?								
Does the format follow "Instructions to Aut								
Is the English style satisfactory and free of grammatical errors?						RECOMMENDATION This paper is: (check only one place)		
Are the references stated and cited in conformance to "Instructions to Authors" of BASYS?								
					$\perp$	Honours quality		
Should the paper be shortened or lengthened?						Acceptable X		
						Acceptable with minor revisions		
Please indicate X in the boxes which, in you the manuscript.	our opinio	on, best desc	ribe the follo	wing fea	tures of	Acceptable with major revisions (review required after revision)		
	Poor	Marginal	Acceptable	Good	Honours	NOT ACCEPTABLE		
Originality of the work								
Research relevance						COMMENTS / JUSTIFICATIONS		
Professional/industrial relevance								
Completeness of the work						To assist the author(s) in revising his/her/their manusci	ript, please	
Acknowledgement of the work of others by references						separate your remarks into two sections:		
Organization of the manuscript						(1) Suggestions which would improve the quality of the p	paper	
Clarity in writing, tables, graphs and illustrations								
Likelihood of passing the 'test of time'								
						(2) Changes which must be made before publication		
				YES	ИО	<b>N</b>		
In your opinion, is the research methodology and treatment of the subject in the paper plausible and free of technical errors?						<i>₩</i>		

(From BASYS conference)

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Is the manuscript free of commercialism?

Have you checked any equations or mathematical treatments (if applicable)? Are you aware of prior publication or presentation of this work?

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# Evaluation criteria – journal example

1. PAPER PROFILE							
Place a check in the boxes which, in yo	ascript.						
Fitting to the theme of the special issue Originality of the work Completeness of the work Organization of the manuscript Clarity in writing Quality/relevance of tables and figures Soundness of methodology Acknowledgement of work by others Likelihood of passing the "test of time"	Poor*	Marginal*	Acceptable	Good	Honours*	(From Journal of Intelligent Manufacturing)	
In your opinion, is the technical treatme Have you checked the equations? Are you aware of prior publication or pr Is the manuscript free of commercialism Is the paper too long (normal range: 500	resentation o	of this work?	Yes	No			
2. YOUR RECOMMENDATION			3. CO	3. COMMENTS			
This paper is: (check only one place)					To assist the author(s) in revising his/her/their manuscript, please separate your remarks into two sections:		
					(A) Suggestions that would improve the quality of the paper but are not essential for publication.		
* Please justify on reverse side					(B) Changes that must be made before publication.		



## 4. INDEXING & CITATIONS

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# How to "measure" the quality of a publication?

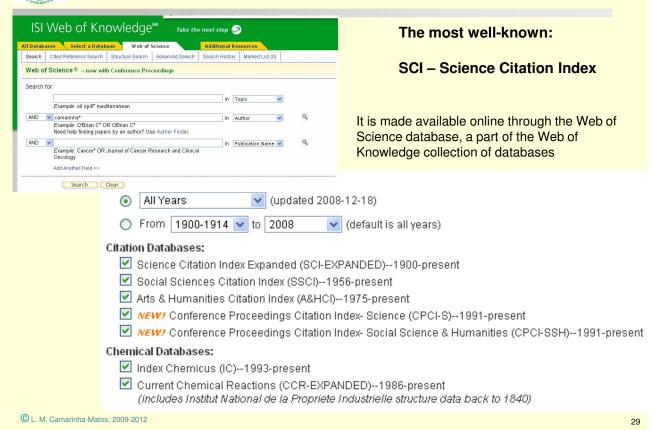
- By the "impact factor" of the journal (an indirect measure)
- By the number of citations
- By some ranking of conferences (an indirect measure)
- etc

... A subject of much discussion!

Bibliometric indicators reflect scientific impact, not quality



# **Institute for Scientific Information (ISI)**





# ISI - Web of Knowledge

## Example:

#### Search by author





# **ISI Journal ranking**

#### Impact Factor 2007 =

Citations in 2007 to articles published in 2005 and 2006

Number of articles published in 2005 and 2006

Immediacy Index measures the average number of times that an article, published in a specific year within a specific journal, is cited over the course of the same year.

Cited Half-life measures the number of years, going back from the current year, that account for half the total citations received by the cited journal in the current year.

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## **Problems with ISI SCI**

The number of citations a publication receives is usually considered as a reflection of the importance of the contribution or its excellence.

As citations are made by other researchers they can be regarded as recognition of merit and thus an extension of the peer reviewing.

But there are some well-known difficulties with this metric:

- Collecting citations. In traditional sciences the ISI Science Citation Index is considered the standard reference. However the ISI database does not cover the full range of journals and is quite weak in terms of the emerging areas e.g. related to Collaborative Networks research. Therefore it is likely that new journals more focused on yourtopics are not scanned by ISI. Other databases (e.g. Citeseer, DBLP, RAM) suffer from similar limitations.
- Patterns of publication. Unlike the traditional sciences, it is a common practice in ICT-related areas to publish in peer-reviewed conferences, which are not considered in ISI SCI.
- Timescale for citation. It is likely that the peak for citations of publications is between two and four years after the publication. On the other hand it usually takes longer than 1 year to have a paper published in a good journal. Therefore, the actual measuring of citations can only take place after the end of a project.
- Citations are not of equal value. A paper may be cited to recognize its excellence, but also sometimes to reject its arguments.



## **SCIMAGO**





# **Conference ranking**

There is no "universal" conference ranking system.

One example for Computer Science related conferences:

#### Australian ranking:

http://www.core.edu.au/ (... Loosing credibility lately, not transparent criteria)

Other examples (computer science):

http://webdocs.cs.ualberta.ca/~zaiane/htmldocs/ConfRanking.html

http://www.ntu.edu.sg/home/assourav/crank.htm

http://www.ntu.edu.sg/home/assourav/crank.htm

#### Other elements:

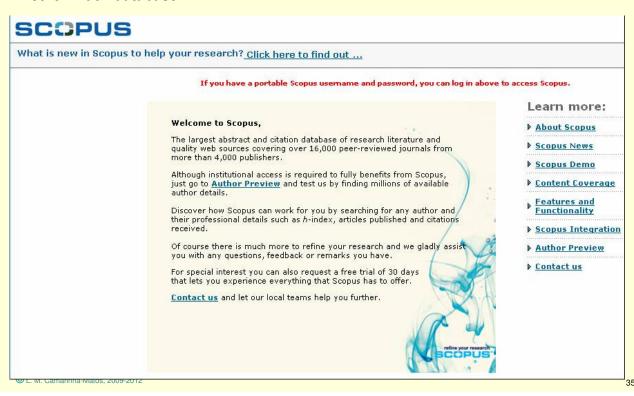
- Proceedings indexed in the Web of Science / Conferences?
- Acceptance / rejection rate
- Sponsored by prestigious societies

- ...



## Scopus

#### Another index database ...





# **Harzing's Publish or Perish**

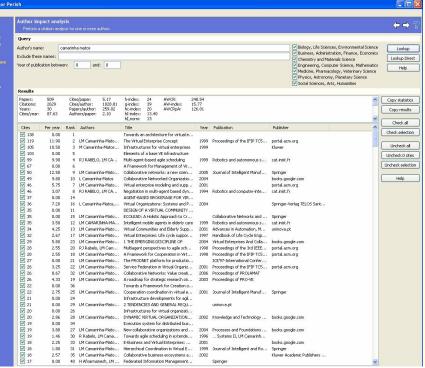
Based on publications available on the web (searchable by Google)

**h-index.** A scientist has index h if h of his N papers have at least h citations each, and the other (N - h) papers have at most h citations each.

**g-index.** Given a set of articles ranked in decreasing order of the number of citations that they received, the gindex is the (unique) largest number such that the top g articles received (together) at least  $q^2$  citations.

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#### http://www.harzing.com/resources.htm#/pop.htm



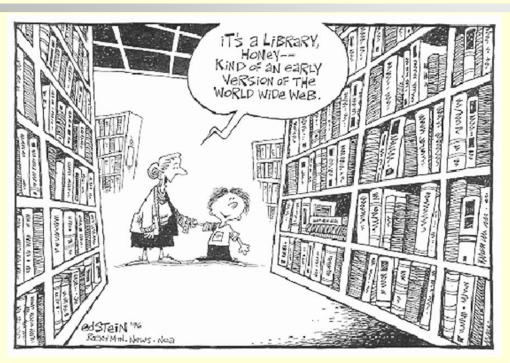
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## **Other tools**

#### **Scholar Google Citations** Microsoft Academic Search Google scholar Luis M. Camarinha-Matos Full Professor, New University of Lisbon Edit Collaborative networks - Virtual Enterprises - Virtual Organizations - Intelligent Manufacturing - Systems Integration Edit Search Authors Academic Verified email at uninova.pt Edit My profile is public Edit Link Homepage Edit Luis M. Camarinha-matos Universidade Nova de Lisboa Publications: 182 | Catalons: 984 | G-index: 24 | Hindex: 15 (1) Interests: Artical Irelappence, Databases, Manufacturing Fechnology (1) Collaborated with 33 co-authors from 1987 to 2011; Cited by 971 authors Chinogage (2) Expression (2) | Control of the Control of Jose Barata (José Barata) Ricardo J. Rabelo Antonio Abreu (António Abreu) All Since 2007 ns 4328 2554 K 31 22 ex 95 68 A. Luis Osorio (A. Luís 1995 1997 2002 2007 2012 Co-author Graph View all co-author IFIP TC5/WG5.3 Publica Order by Year ProActive Service Entits Framework. Improving Service Selection Chances within Large Senior Professional Virtual Community Sconario Tago Cardeou, Liuli M. Camatshia Matoo Coffeence FP Liuli M. Camatshia Matoo IFIP TC5/WG5.5 Publications TELECARE Supporting business process management and coordination in a virtual enterprise LM Camarioha-Matos, C Pantoja-Lima Proceedings of the IFIP TC5WGS 3, 3-14 Send invitation ICRA APMS Journals (18) INT J PROD RES J INTELL MANUF Elements of a base VE infrastructure 210 2003 Collaborative networks: A new scientific discipline LM Camarinha-Matos, H Afsarmanesh Journal of Intelligent Manufacturing 16 (4), 439-452 A conceptual model of value systems in collaborative networks (ca ProActive As Towards an architecture for virtual enterprises LM Camarinha-Matos, H Afsarmanesh, C Garita, C Lima Journal of Intelligent Manufacturing 9 (2), 189-199 Tiago Cardoso, Conference: IFIF 171 1998 On emerging technologies for VO LM Camarinha-Matos, V Tschammer, H Afsarn Collaborative Networked Organizations – A re: Collaborative networks: Value creation in a knowledge society L Camarinha-Matos, H Afsarmanesh Virtual enterprise modeling and support infrastructures: applying multi-agent system approaches L Camarinha-Matos, H Afarmanesh Multi-agent systems and applications, 335-364 Virtual Organizations: systems and practices L Camarinha-Matos, H Afsarmanesh, M Ollus 90 2005 ECOLEAD: Aholistic approach to creation and management of dynamic virtual organizations C L. M. Camarinha-Matos, 2009-2012 37





Will we move to electronic publications?