HCI Research Skills

张雷
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简介

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Outline

• HCI Research

• How to find papers: paper searching skills
  • by author
  • by conference/journal
  • by publisher

• How to read a paper: paper reading skills
  • a three-pass approach
• Human–computer interaction involves the study, planning, design and uses of the interaction between people and computers.
HCI doesn’t follow Moore’s law

<table>
<thead>
<tr>
<th>Original Macintosh</th>
<th>iMac 27”</th>
</tr>
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<tbody>
<tr>
<td>January 1984 - $2500</td>
<td>September 2012 - $1700</td>
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<tr>
<td>CPU 68000 - 0.7 MIPS</td>
<td>CPU core i7 - 150 000 MIPS</td>
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<tr>
<td>RAM 128 kB</td>
<td>RAM 4 GB</td>
</tr>
<tr>
<td>Floppy 400 kB</td>
<td>Hard drive 1 TB</td>
</tr>
<tr>
<td>9” n&amp;b, 512x342</td>
<td>27” colors, 2560x1440</td>
</tr>
<tr>
<td>Keyboard, mouse</td>
<td>Keyboard, mouse</td>
</tr>
<tr>
<td>WIMP desktop</td>
<td>WIMP desktop</td>
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</tbody>
</table>
HCI Research

- paper searching skills
- paper reading skills
- paper writing skills
Why care about papers?

- class projects, homework
- scholarships
- admission offers
- knowledge
How to find a paper
Academia

- research
- author:
  - university, institute
- reviewer:
  - conference, journal
- publisher:
  - publishing company, special interest groups
Academic publishing

- peer-review model
- publisher
- author
- reviewer
finding paper by publisher
finding paper by conference, journal
finding paper by author
Academic publisher

- ACM
- IEEE
- AAAI
- Springer
- Elsevier
- Wiley
- ...

[Image of a webpage with a library interface]
Academic publisher

- ACM
- IEEE
- AAAI
- Springer
- Elsevier
- Wiley
- ...

<table>
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<th>operating profit</th>
<th>company</th>
<th>industry</th>
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<tbody>
<tr>
<td>7%</td>
<td>Woolworths</td>
<td>supermarkets, pokies</td>
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<tr>
<td>12%</td>
<td>BMW</td>
<td>automobiles</td>
</tr>
<tr>
<td>23%</td>
<td>Rio Tinto</td>
<td>mining</td>
</tr>
<tr>
<td>35%</td>
<td>Apple</td>
<td>premium computing</td>
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<tr>
<td>34%</td>
<td>Springer</td>
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<tr>
<td>36%</td>
<td>Elsevier</td>
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</tr>
<tr>
<td>40%</td>
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finding paper by publisher
finding paper by conference, journal
finding paper by author
Academic conferences

• ASSETS: ACM International Conference on Computers and Accessibility
• CHI: ACM’s Conference on Human Factors in Computing Systems
• CSCW: ACM conference on Computer Supported Cooperative Work
• DIS: ACM conference on Designing Interactive Systems
• ECSCW: European Conference on Computer-Supported Cooperative Work
• GROUP: ACM conference on supporting group work
• HRI: ACM/IEEE International Conference on Human–robot interaction
• ICMI: International Conference on Multimodal Interfaces
• ITS: ACM conference on Interactive Tabletops and Surfaces
• MobileHCI: International Conference on Human–Computer Interaction with Mobile Devices and Services
• NIME: International Conference on New Interfaces for Musical Expression
• Ubicomp: International Conference on Ubiquitous computing
• UIST: ACM Symposium on User Interface Software and Technology
• i-USEr: International Conference on User Science and Engineering
Academic journals

- ACM Transactions on Computer-Human Interaction
- Behaviour & Information Technology
- Interacting with Computers
- International Journal of Human-Computer Interaction
- International Journal of Human-Computer Studies
- Human-Computer Interaction
Which one is more important?

• 文献计量学bibliometrics
• Science Citation Index (SCI)
  • 美国科学信息研究(ISI)1964创办
  • 收录150个学科的6500余期刊
<table>
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<tr>
<th>奖励级别</th>
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<th>说明</th>
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<tr>
<td>超一流期刊</td>
<td>100</td>
<td>NATURE, SCIENCE 和 CELL 三种综合性期刊</td>
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<tr>
<td>学科群一流期刊</td>
<td>40</td>
<td>PNAS, NATURE 子刊、PRL, ANGEW, JACS 及其它影响因子大于 20 的期刊</td>
</tr>
<tr>
<td>一级学科一区期刊</td>
<td>10</td>
<td>中国科学技术信息研究所 SCI 一区期刊</td>
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<tr>
<td>一级学科二区期刊</td>
<td>5</td>
<td>中国科学技术信息研究所 SCI 二区期刊、SCIENCE CHINA、CHINESE SCIENCE BULLETIN</td>
</tr>
<tr>
<td>一级学科三区期刊</td>
<td>3</td>
<td>中国科学技术信息研究所 SCI 三区期刊</td>
</tr>
</tbody>
</table>

关于调整SCI论文业绩点奖励标准的办法

(试行) 2012.12.31
http://scit.nju.edu.cn
IF: Impact Factor

- 影响因子IF：被引用总次数/发表的论文总数

- 某期刊2010年影响因子的计算

  - 本刊2009年的文章在2010年的被引次数：48；本刊2009年的发文量：187
  - 本刊2008年的文章在2010年的被引次数：128；本刊2008年的发文量：154
  - 本刊2008-2009的文章在2010年的被引次数总计：176 = (48+128)
  - 本刊2008-2009年的发文量总计：341 = (187+154)
  - 本刊2010年的影响因子：0.5161 = (176/341)
Impact Factor cont’d

CA-CANCER J CLIN 0007-9235 153.459
NEW ENGL J MED 0028-4793 51.658
REV MOD PHYS 0034-6861 44.982
CHEM REV 0009-2665 41.298
NAT REV GENET 1471-0056 41.063
NATURE 0028-0836 38.597
NAT REV MOL CELL BIO 1471-0072 37.162
...
SCIENCE 0036-8075 31.027
...
...
IEEE T FUZZY SYST 1063-6706 5.484
IEEE T PATTERN ANAL 0162-8828 4.795
...
ACM T COMPUT-HUM INT 1073-0516 1.179

只计算期刊，CS非常重视的国际会议没有列入计算范围
The h-index:

A scientist has an h-index of h if they have published h papers each of which has been cited in other papers at least h times.
h-index cont’d

Publication h5-index
1. Nature 355
2. The New England Journal of Medicine 329
3. Science 311
4. The Lancet 248
5. Cell 223

IEEE Conference on Computer Vision and Pattern Recognition, CVPR 118
Expert Systems with Applications 89
Computer Human Interaction (CHI) 78
International Journal of Human-Computer Studies 33
Mobile HCI 27
中国计算机学会推荐国际学术会议和期刊目录

• 人工投票修订，期刊和会议分为A、B、C三档。

• A类指国际上极少数的顶级刊物和会议，鼓励我国学者去突破；

• B类指国际上著名和非常重要的会议、刊物，有重要的学术影响，鼓励国内同行投稿；

• C类指国际学术界所认可的重要会议和刊物；

• [http://www.ccf.org.cn/sites/ccf/paiming.jsp](http://www.ccf.org.cn/sites/ccf/paiming.jsp)
CCF列表

• 广泛采用：
  • 学科评估，职称评审
  • 硕士毕业
  • C类1篇

• 博士毕业
  • (1) A类1篇
  • (2) B类1篇 + C类以上1篇
  • (3) C类3篇,并且达到学校标准
2015年南京大学计算机科学与技术系推荐免试攻读硕士学位研究生工作实施细则

- 学术论文第一作者加分规定如下：
  - CCF-A类会议与期刊加0.2分；
  - CCF-B类会议与期刊加0.15分；
  - CCF-C类会议与期刊加0.1分；

- 国内一级学报《软件学报》、《机学报》、《电子学报》、《研究与发展》等同CCF-C类，加0.1分
人机交互A类会议

- hosted by ACM Special Interest Group on computer–human interaction since 1982

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<th>Year</th>
<th>City</th>
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<tr>
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<td>Denver</td>
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<td>2016</td>
<td>San Jose</td>
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<tr>
<td>2015</td>
<td>Seoul</td>
<td></td>
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<tr>
<td>2014</td>
<td>Toronto</td>
<td></td>
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<tr>
<td>2013</td>
<td>Paris</td>
<td>3300</td>
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<td>…</td>
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<td>1990</td>
<td>Seattle</td>
<td>2314</td>
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<table>
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<th>Accepted</th>
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<td>2435</td>
<td>565</td>
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<td>CHI 2015</td>
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<td>486</td>
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<td>CHI 2014</td>
<td>2043</td>
<td>465</td>
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<td>CHI 2009</td>
<td>1130</td>
<td>277</td>
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<td>CHI 2008</td>
<td>714</td>
<td>157</td>
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<tr>
<td>CHI 2007</td>
<td>571</td>
<td>142</td>
<td>25 %</td>
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CHI tracks

- Academic papers and notes (short papers) on a variety of topics, such as (ubiquitous computing, visualization, usability and user experience design)
- Posters and demonstrations
- Workshops and courses hosted by domain experts
- Invited panels on relevant topics
- Case studies from industry practitioners
CHI 2016 Best Papers

1. The Effect of Visual Appearance on the Performance of Continuous Sliders and Visual Analogue Scales
   Duet: Exploring Joint Interactions on a Smart Phone and a Smart Watch

2. Designing Movement-based Play With Young People Using Powered Wheelchairs
   Type-Hover-Swipe in 96 Bytes: A Motion Sensing Mechanical Keyboard

3. Object-Oriented Drawing

4. Enabling Designers to Foresee Which Colors Users Cannot See

5. On Looking at the Vagina through Labella

6. Project Jacquard: Manufacturing Digital Textiles at Scale

7. “I don’t want to wear a screen”: Probing perceptions of and possibilities for dynamic displays on clothing

8. Momentary Pleasure or Lasting Meaning? Distinguishing Eudaimonic and Hedonic User Experiences

9. RapID: A Framework for Fabricating Low-Latency Interactive Objects with RFID Tags

10. HCI Research as Problem-Solving

11. ....
Exploring the Acceptability of Google Glass as an Everyday Assistive Device for People with Parkinson’s

CHI 2014

Exploring the Acceptability of Google Glass as an Everyday Assistive Device for People with Parkinson’s

Róisín McNaney, John Vines, Daniel Roggen, Madeline Balaam, Pengfei Zhang, Ivan Poliakov and Patrick Olivier

Culture Lab, School of Computing Science, Newcastle University, UK

{r.mcnaney; john.vines}@ncl.ac.uk
人机交互A类期刊

- published by ACM SIGCHI since 1994
- 4 issues/year
- IF: 1.194
- [http://tochi.acm.org/](http://tochi.acm.org/)
### 人机交互B类会议

<table>
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<tr>
<th>序号</th>
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<tr>
<td>1</td>
<td>CSCW</td>
<td>ACM Conference on Computer Supported Cooperative Work and Social Computing</td>
<td>ACM</td>
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<tr>
<td>2</td>
<td>IUI</td>
<td>ACM International Conference on Intelligent User Interfaces</td>
<td>ACM</td>
</tr>
<tr>
<td>3</td>
<td>ITS</td>
<td>ACM International Conference on Interactive Tabletops and Surfaces</td>
<td>ACM</td>
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<td>4</td>
<td>UIST</td>
<td>ACM Symposium on User Interface Software and Technology</td>
<td>ACM</td>
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<tr>
<td>5</td>
<td>ECSCW</td>
<td>European Computer Supported Cooperative Work</td>
<td>Springer</td>
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<tr>
<td>6</td>
<td>MobileHCI</td>
<td>International Conference on Human Computer Interaction with Mobile Devices and Services</td>
<td>ACM</td>
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人机交互B类期刊

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<td>HCI</td>
<td>Human Computer Interaction</td>
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<td>3</td>
<td>IWC</td>
<td>Interacting with Computers</td>
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<td>4</td>
<td>UMUAUI</td>
<td>User Modeling and User-Adapted Interaction</td>
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人机交互C类

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<td>2</td>
<td>IJHCI</td>
<td>International Journal of Human-Computer Interaction</td>
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<td>3</td>
<td>PMC</td>
<td>Pervasive and Mobile Computing</td>
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<tr>
<td>4</td>
<td>PUC</td>
<td>Personal and Ubiquitous Computing</td>
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<table>
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<tr>
<td>1</td>
<td>GROUP</td>
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<td>2</td>
<td>ASSETS</td>
<td>ACM Conference on Supporting Group Work</td>
</tr>
<tr>
<td>3</td>
<td>DIS</td>
<td>ACM Conference on Designing Interactive Systems</td>
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<tr>
<td>4</td>
<td>GI</td>
<td>Graphics Interface conference</td>
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<td>5</td>
<td>MobiQuitous</td>
<td>International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services</td>
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<td>6</td>
<td>PERCOM</td>
<td>IEEE International Conference on Pervasive Computing and Communications</td>
</tr>
<tr>
<td>7</td>
<td>INTERACT</td>
<td>IFIP TC13 Conference on Human-Computer Interaction</td>
</tr>
<tr>
<td>8</td>
<td>CoopIS</td>
<td>International Conference on Cooperative Information Systems</td>
</tr>
<tr>
<td>9</td>
<td>ICMI</td>
<td>ACM International Conference on Multimodal Interaction</td>
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<td>10</td>
<td>IDC</td>
<td>Interaction Design and Children</td>
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<tr>
<td>11</td>
<td>AVI</td>
<td>International Working Conference on Advanced User Interfaces</td>
</tr>
<tr>
<td>12</td>
<td>UIC</td>
<td>IEEE International Conference on Ubiquitous Intelligence and Computing</td>
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</tbody>
</table>
finding paper by publisher
finding paper by conference, journal
finding paper by author
HCI researchers

most major CS departments and research labs around the world.
HCI researchers

- Randy Pausch
  - CS/HCI Prof. @CMU
  - 1960.10.23 – 2008.7.25
  - The Last Lecture

“Really Achieving Your Childhood Dreams”
September 18, 2007
The Last Lecture

- www.thelastlecture.com

- a million times in the 1st month

- The 2008 TIME 100

- New York Times best-seller

which one to follow?

- citations
- h-index
- personal homepage
- Google scholar profile
- Microsoft academic search
- …
How to read a paper
Paper reading

• critical but rarely taught skill

• separate the competent from the average
The three-pass approach

• The first pass gives you a general idea about the paper.

• The second pass lets you grasp the paper’s content, but not its details.

• The third pass helps you understand the paper in depth.
The first pass

- five to ten minutes
- read
  - title, abstract, and introduction
  - Read the section and subsection headings
  - Glance at the mathematical content
  - Read the conclusions
- Glance over the references,
The first pass

- five to ten minutes
- read
  - title, abstract, and introduction
- Read the section and sub-section headings
- Glance at the mathematical content
- Read the conclusions
- Glance over the references,
The first pass

- five to ten minutes
- read
  - title, abstract, and introduction
  - Read the section and sub-section headings
  - Glance at the mathematical content
  - Read the conclusions
  - Glance over the references,
The first pass

- At the end of the first pass, you should be able to answer the five Cs:
  
1. Category: What type of paper is this? A measurement paper? An analysis of an existing system? A description of a research prototype?

2. Context: Which other papers is it related to? Which theoretical bases were used to analyze the problem?
The first pass

3. Correctness: Do the assumptions appear to be valid?

4. Contributions: What are the paper’s main contributions?

5. Clarity: Is the paper well written?
The first pass

• 第一遍后不想读了

• 没有兴趣

• 知识不足理解文章

• 文章假设不合理，垃圾...

• 适合背景不太熟悉但日后可能有用的论文
The second pass

- print out, make comments in the margin
- read the paper with greater care, but ignore details such as proofs
- mark relevant unread references for further reading
- an hour for an experienced reader
The second pass

- print out, make comments in the margin
- read the paper with greater care, but ignore details such as proofs
- mark relevant unread references for further reading
- an hour for an experienced reader
The second pass

• should be able to grasp the content of the paper

• unfamiliar proof or experimental technique, still don’t understand

  • choice 1: set the paper aside, hoping you won’t need it to be successful in your career

  • choice 2: return later, reading background materials

  • choice 3: pass three
The third pass

• attempt to virtually reimplement the paper

• by comparing your recreation with the actual paper, you can easily identify not only a paper’s innovations, but also its hidden failings and assumptions.

• many hours for beginners, more than an hour or two even for an experienced reader
The third pass

• reconstruct the entire structure of the paper from memory

• identify its strong and weak points

• pinpoint

  • implicit assumptions

  • missing citations to relevant work

  • potential issues with experimental or analytical techniques.
References


Thanks!

Questions?