Citation Indexing

CS846 – Spring 2021
Presenter: Sina Hojjati
Citation Indexing

• What is citation?
• What is reference?
• What is citation index?
History of Citation Indexing

• Pre-printing era
History of Citation Indexing

• Pre-printing era
• Printing era
  • Manual Subject Index
History of Citation Indexing

- Pre-printing era
- Printing era
  - Manual subject index
- Citation indexing

Eugene Garfield (1925 – 2017)
The Science Citation Index (SCI)

• Covering all scientific disciplines
  • Bradford’s law of scattering
  • The journal impact factor (JIF)

• Web of Science (WoS)
Predicting Nobel Prize Winners

Fifty most cited authors for 1967, ranked according to total number of times cited. Nobel Prize in Physics, 1969. Nobel Prize in Chemistry, 1969. Authors in boldface type have won Nobel Prizes in later years. [2]

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cited</th>
<th>Name</th>
<th>Rank</th>
<th>Cited</th>
<th>Name</th>
<th>Rank</th>
<th>Cited</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2921</td>
<td>Lowry OH</td>
<td>18</td>
<td>754</td>
<td>Bergmeyer HU</td>
<td>35</td>
<td>673</td>
<td>Dedue C</td>
</tr>
<tr>
<td>2</td>
<td>1374</td>
<td>Chance B</td>
<td>19</td>
<td>750</td>
<td>Weber G</td>
<td>36</td>
<td>668</td>
<td>von Euler US</td>
</tr>
<tr>
<td>3</td>
<td>1174</td>
<td>Landau LD</td>
<td>20</td>
<td>748</td>
<td>Reynolds ES</td>
<td>37</td>
<td>666</td>
<td>Fieser LF</td>
</tr>
<tr>
<td>4</td>
<td>1150</td>
<td>Brown HC</td>
<td>21</td>
<td>741</td>
<td>Mott NF</td>
<td>38</td>
<td>661</td>
<td>Huisgen R</td>
</tr>
<tr>
<td>5</td>
<td>1063</td>
<td>Pauling L</td>
<td>22</td>
<td>737</td>
<td>Eccles JC</td>
<td>39</td>
<td>655</td>
<td>Novikoff AB</td>
</tr>
<tr>
<td>6</td>
<td>942</td>
<td>Gell-Mann M</td>
<td>23</td>
<td>729</td>
<td>Feigl F</td>
<td>40</td>
<td>643</td>
<td>Goodwin TW</td>
</tr>
<tr>
<td>7</td>
<td>940</td>
<td>Cotton FA</td>
<td>24</td>
<td>727</td>
<td>Freud S</td>
<td>41</td>
<td>632</td>
<td>Barton DHR</td>
</tr>
<tr>
<td>8</td>
<td>933</td>
<td>Pople JA</td>
<td>25</td>
<td>726</td>
<td>Pearse AGE</td>
<td>42</td>
<td>631</td>
<td>Fisher RA</td>
</tr>
<tr>
<td>9</td>
<td>906</td>
<td>Bellamy LJ</td>
<td>26</td>
<td>721</td>
<td>Eiel EL</td>
<td>43</td>
<td>627</td>
<td>Bates DR</td>
</tr>
<tr>
<td>10</td>
<td>904</td>
<td>Snedecor GW</td>
<td>27</td>
<td>717</td>
<td>Streitwieser A</td>
<td>44</td>
<td>626</td>
<td>Flory PJ</td>
</tr>
<tr>
<td>11</td>
<td>893</td>
<td>Boyer PD</td>
<td>28</td>
<td>712</td>
<td>Mulliken RS</td>
<td>45</td>
<td>626</td>
<td>Stahl E</td>
</tr>
<tr>
<td>12</td>
<td>876</td>
<td>Baker BR</td>
<td>29</td>
<td>711</td>
<td>Jacob F</td>
<td>46</td>
<td>619</td>
<td>Dewar MJS</td>
</tr>
<tr>
<td>13</td>
<td>863</td>
<td>Koithoff IM</td>
<td>30</td>
<td>710</td>
<td>Born M</td>
<td>47</td>
<td>618</td>
<td>Gilman H</td>
</tr>
<tr>
<td>14</td>
<td>842</td>
<td>Herzberg G</td>
<td>31</td>
<td>706</td>
<td>Brachet J</td>
<td>48</td>
<td>618</td>
<td>Folch J</td>
</tr>
<tr>
<td>15</td>
<td>826</td>
<td>Fischer F</td>
<td>32</td>
<td>702</td>
<td>Weinstein S</td>
<td>49</td>
<td>614</td>
<td>Dische Z</td>
</tr>
<tr>
<td>16</td>
<td>822</td>
<td>Seitz F</td>
<td>33</td>
<td>687</td>
<td>Albert A</td>
<td>50</td>
<td>609</td>
<td>Glick D</td>
</tr>
<tr>
<td>17</td>
<td>801</td>
<td>Djerassi C</td>
<td>34</td>
<td>674</td>
<td>Luft JH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Authors in boldface type have won Nobel Prizes in later years.*
Citation Searching

• Backward searching

• Forward searching
Citation Indexing Applications

- Information management and retrieval.
Citation Indexing Applications

• Information management and retrieval.

• Evaluate research and researchers.
Citation Indexing Applications

• Information management and retrieval.
• Evaluate research and researchers.
• Uses in Historical Research

Citation network of fifteen articles on nucleic acids. [2]
Citation Indexing Applications

- Information management and retrieval
- Evaluate research and researchers
- Uses in historical research
- Finding citation anomalies

Citation network showing citations to Mendel before alleged “rediscovery”. [2]
Citation Databases From Other Database Producers

- CiteSeerX
- Scopus
- Google Scholar
Citation Unification

A. Ørom as cited author and printing year = 2003 in WoS, cited reference index. [1]

---

<table>
<thead>
<tr>
<th>Select</th>
<th>Cited Author</th>
<th>Cited Work [Expand Titles]</th>
<th>Title [Expand Titles]</th>
<th>Early Access Year ***</th>
<th>Year</th>
<th>Volume</th>
<th>Issue</th>
<th>Page</th>
<th>Identifier</th>
<th>Citing Articles **</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OROM A</td>
<td>BIBLIOTEKSARBEJDE</td>
<td></td>
<td></td>
<td>2003</td>
<td>65</td>
<td>61</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OROM A</td>
<td>KNOWLEDGE ORG</td>
<td></td>
<td></td>
<td>2003</td>
<td>30</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OROM A</td>
<td>KNOWLEDGE ORG</td>
<td></td>
<td></td>
<td>2003</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orom, A</td>
<td>KNOWL ORGAN</td>
<td>Knowledge organization in the domain of art studies...</td>
<td>2003</td>
<td>30</td>
<td>3-4</td>
<td>128</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OROM A</td>
<td>TENDENCIAS INVESTIGA</td>
<td></td>
<td></td>
<td>2003</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Criticisms of Citation Analysis

• Negative citations
• Excessive self-citations
• Primary references
Possible Future Works

• Improving citation unification

• Recommender systems
References


Any Questions?