An assessment of systems and software engineering scholars and institutions (1997–2001)

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Abstract

This paper presents the findings of a five-year study of the top scholars and institutions in the systems and software engineering field, as measured by the quantity of papers published in the journals of the field. The top scholar is Richard Lai of LaTrobe University in Australia, and the top institution is Carnegie Mellon University and its Software Engineering Institute. The paper lists the top 15 scholars and institutions.

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1. Introduction

Who are the most published scholars in the field of systems and software engineering (SSE)? Which are the most published institutions?

This paper is the ninth in an annual series whose goal is to answer those questions. The first such paper was Glass (1994); subsequently such studies have been published each year, in a fall issue of this journal (when the journal was published 12 times per year, the study findings were published in the October issue; now that it is published 15 times per year, they are published in the 12th or 13th issue). This is the fifth year in which the study has included five years’ worth of data (in the previous years, 1–4 years were covered). In future years, the study will continue to cover the most recent five year period. This paper reports on the top scholars and institutions for the five-year period 1997–2001.

The methodology of the study and its limitations will be discussed later in this article. It is important to note two things at the outset, however:

1. The study findings are based on frequency of publication in the leading journals in the SSE field.

2. The study focuses on the field of SSE, and not, for example, on computer science or information systems.

Here are the findings.

2. Leading scholars

The leading scholars in the field are shown in Table 1. These scholars have achieved a score of 4.0 or more during the years covered by this study. (The scoring scheme is discussed under the topic “Study Methodology” below, but a 4.0 roughly represents participation in four or somewhat more published papers during the study period.) The table lists the top 15 ranked scholars (actually, there are 16 this year, with three tied for 14th place), with scores ranging from 4.0 to 11.0. Note that because of the sliding time period used, authors can actually have fewer papers (and a lower score) in one year’s study than they had the year before—the range last year, for example, was 4.0–11.7.

The geographic spread of the top scholars is interesting—six are from the Americas, five from the Asia-Pacific region, four are from Europe, and one is from the Middle East.

The top scholar in this year’s study is Richard Lai of LaTrobe University, Australia. Lai leads the list for the fourth year in a row, this year with a score of 11.0.
This year’s second place scholar is quite a surprise, rising from an unranked position last year. Khaled El Emam of the Canadian National Research Council Institute for Information Technology has a score of 7.2. Third place also is something of a surprise; Barbara Kitchenham of Keele University, UK, rose from seventh place last year, with a score this year of 6.1. Kassem Saleh of the American University of Sharjah was fourth (down from third last year), with 5.8. Johnny S.K. Wong of Iowa State was tied for fifth with Robert L. Glass of Computing Trends, editor emeritus of this journal, with a score of 5.7. Also tied, in this case for seventh, were Vic Basili of the University of Maryland, and Ruei-Chen Chang of National Chiao Tung University, Taiwan, with 5.6. T.Y. Chen of Swinburne University of Technology in Australia was ninth, with 5.5. Chin-Chen Chang of National Chung Cheng University, Taiwan, was tenth, with 5.0.

Paolo Nesi of the University of Florence, Italy, moved into the ranked positions this year at 11th, with 4.5. Michael Jackson, an independent consultant, is 12th, tied with newcomer Brian Henderson-Sellers, now of the University of Technology, Sydney, Australia (he was at Swinburne University in Australia during part of this time period), at 4.4. Three scholars are tied for the 14th and final position this year, all with 4.0—J.H. Poore of the University of Tennessee, and newcomers Mary Jean Harrold of Georgia Tech and Les Hutton of the University of Kent (UK).

In Table 1, we list the top scholars in this year’s study. We asked the top scholars to indicate the key words that best describe their research focus. Here are those

Table 1
Top scholars in the field of SSE

<table>
<thead>
<tr>
<th>Rank</th>
<th>Scholar</th>
<th>Journals in which published</th>
<th>Score</th>
<th>Previous rank</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>IST JSS SPE SW TOSEM TSE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Richard Lai, LaTrobe</td>
<td>1.4 8.2 1.4</td>
<td>11.0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Khaled El Emam, Canadian National Reseach Council</td>
<td>3.7 0.5 3.0</td>
<td>7.2</td>
<td>–</td>
</tr>
<tr>
<td>3</td>
<td>Barbara Kitchenham, Keele</td>
<td>1.7 1.4 1.5</td>
<td>6.1</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Kassem Saleh, American University Sharjah</td>
<td>5.1 0.7 5.8</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Johnny S.K. Wong, Iowa State</td>
<td>5.2 0.5 5.7</td>
<td>–</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Robert L. Glass, Computing Trends</td>
<td>5.7</td>
<td>–</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>Victor R. Basili, Maryland</td>
<td>2.2 3.4 5.6</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Ruei-Chuan Chang, National Chiao Tung</td>
<td>2.5 3.1 5.6</td>
<td>–</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>T.Y. Chen, Swinburne University of Technology</td>
<td>4.0 0.7 0.8</td>
<td>5.5</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Chin-Chen Chang, National Chung Cheng</td>
<td>5.0</td>
<td>–</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>Paolo Nesi, Florence</td>
<td>0.7 1.4 1.0 1.4 4.5</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Michael Jackson, consultant</td>
<td>1.0 2.0 0.7 0.7 4.4</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Brian Henderson-Sellers, Technology/Sydney</td>
<td>2.2 1.2 1.0</td>
<td>–</td>
<td>4.4</td>
</tr>
<tr>
<td>14</td>
<td>J.H. Poore, Tennessee</td>
<td>2.6 1.4</td>
<td>4.0</td>
<td>15</td>
</tr>
<tr>
<td>14</td>
<td>Mary Jean Harrold, Georgia Tech</td>
<td>0.5 1.5 2.0</td>
<td>–</td>
<td>4.0</td>
</tr>
<tr>
<td>14</td>
<td>Les Hutton, Kent</td>
<td>4.0</td>
<td>–</td>
<td>4.0</td>
</tr>
</tbody>
</table>

*Journal abbreviations are defined later in this paper.

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In Table 1, we list the top scholars in this year’s study. We asked the top scholars to indicate the key words that best describe their research focus. Here are those
results, in Table 2. The most striking characteristic of these responses is probably their diversity; except for quality assurance/testing, methods/methodologies, metrics/measurement, security, and web/e-commerce, which are mentioned more than once, there is very little repetition of topics.

3. Leading institutions

The leading 15 institutions in the field are shown in Table 3. These institutions have achieved a score of 9.88 or more during the years covered by the study. The institutional scoring scheme is similar but not identical to that for authors; the scheme and its differences are discussed under the study methodology section below. There are 15 leading institutions, with scorings ranging from 9.88 to 25.19.

Most of the top institutions are from academe, although three are industry research centers. Geographically, six of the institutions are from the Americas, five are from the Asia-Pacific region, and four are from Europe.

Carnegie Mellon University (CMU) once again tops the list this year, with a score of 25.19. CMU has been the leader now for four years. National Chiao Tung University of Taiwan moves into second (from third), with 24.28. Lucent’s Bell Labs moves up to third place this year (from fourth), at 19.87. The University of Maryland moves up to fourth, from fifth, with 18.44. The National University of Singapore, which was in second place last year, falls to fifth, with 17.92. AT&T Research Labs remains in sixth, with 15.17.

The biggest increase in position in recent years comes from Fraunhofer Institute for Experimental Software Engineering (Germany), which leaps onto the list this year at seventh, with 14.38. Politecnico di Milano moves up to eighth, with 13.31. Korea Advanced Institute for Science and Technology moves from 15th to ninth, with 13.24. National Cheng Kung University of Taiwan falls a notch, to 10th, with 12.42.

LaTrobe University of Australia fell from seventh to 11th, with 12.25. City University of London fell from eighth to 12th, with 11.67. Iowa State is 13th, down from 10th, with 10.95.

Another newcomer to the list, Keele University of England, is 14th, with 10.88. And the 15th and final institution on the list is Ohio State University, with 9.88.

There are a couple of special circumstances associated with the top-ranked institutions. First, CMU’s score includes that for the Software Engineering Institute, which is located at CMU (that is not new in the study this year, but it does account for higher scores over the years than would have been achieved by CMU alone). Second, because of the spin-off of Lucent Technologies from AT&T, there is some controversy about how the scores for Bell Labs and AT&T Research Labs should be aggregated. The Bell Labs heritage now rests in both of those institutions, and employees of the two have given us conflicting viewpoints on who should claim those historical scores. We have elected to go with the name, Bell Labs, and therefore have included what was formerly called AT&T Bell Labs with the Lucent, not AT&T, scores.

It should be noted that geographically separated branches of an institution are scored as unique institutions—for example, the campuses of the University of California are each scored separately, as are the various branches and laboratories of IBM (this rule is particularly harmful to the IBM score, since there are 18 separate IBM locations that have achieved scores). Note also that scores are not normalized for the number of researchers; for example, an institution with 100 researchers and one with two will be scored identically. Although this may be an advantage to institutions with

<table>
<thead>
<tr>
<th>Rank</th>
<th>Institution</th>
<th>Journals</th>
<th>Score</th>
<th>Previous rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carnegie Mellon/SEI</td>
<td>All but SPE</td>
<td>25.19</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>National Chiao Tung University</td>
<td>All but SW, TOSEM</td>
<td>24.28</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Bell Labs, Lucent</td>
<td>All but IST</td>
<td>19.87</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>University of Maryland</td>
<td>All six</td>
<td>18.44</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>National University of Singapore</td>
<td>All but TOSEM</td>
<td>17.92</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>AT&amp;T Research Labs</td>
<td>All but IST</td>
<td>15.17</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Fraunhofer Institute</td>
<td>All but SPE, TOSEM</td>
<td>14.38</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>Politecnico di Milano</td>
<td>All but SPE, SW</td>
<td>13.31</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>Korea Advanced Institute of Science &amp; Technology</td>
<td>All but SW, TOSEM</td>
<td>13.24</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>National Cheng Kung University</td>
<td>IST, JSS, SPE</td>
<td>12.42</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>LaTrobe University</td>
<td>IST, JSS, SPE</td>
<td>12.25</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>City University, London</td>
<td>All but IST, TOSEM</td>
<td>11.67</td>
<td>8</td>
</tr>
<tr>
<td>13</td>
<td>Iowa State University</td>
<td>All but TOSEM</td>
<td>10.95</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>Keele University</td>
<td>All but SPE, TOSEM</td>
<td>10.88</td>
<td>–</td>
</tr>
<tr>
<td>15</td>
<td>Ohio State University</td>
<td>All six</td>
<td>9.88</td>
<td>14</td>
</tr>
</tbody>
</table>
a large number of researchers, it does not give special advantage to very small institutions, as normalization would do.

4. Other rankings

Recall that this study is specific to the field of SSE. There are similar studies for the related fields of computer science (CS) and information systems (IS).

Regarding CS, the best and latest such study is Geist et al. (1996). That study examines CS research institutions only (not individual authors), and restricts itself to academic institutions (none from industry) in the US (none from outside the US). (The authors of this study tell us, however, that there is a web version of the study that includes industrial as well as academic institutions, and that is international in scope. This raises one of the interesting dilemmas of the electronic age, specifically regarding what constitutes scholarly published work. We have chosen to utilize the printed, stable, reference version of the study, and we mention the web version only in passing.) For its methodology, (Geist et al., 1996) examined published papers in the journals of the ACM and IEEE Computer Society (excluding Communications of the ACM). As will be seen later in this paper, the CS study covers more journals than this one (and in that sense is broader), but it does not examine journals from outside the professional societies that we cover here.

Nevertheless, the findings of the CS study are interesting. It lists and ranks the top 100 US academic CS programs. The top 10 are the University of Maryland, MIT, the University of Illinois, the University of Michigan, the University of Texas, Carnegie Mellon, Stanford, the University of Wisconsin, the University of Southern California, and Purdue. Given that SSE and CS are related fields, perhaps the biggest surprise here is the differences between the lists. Only two of the top 10 in the CS list are in the SSE list. However, it should be noted that the CS study includes neither foreign nor industry organizations, and eight of the top 10 in our list fall into those categories. It is difficult to decide whether the studies differ because of the population of institutions they examine, or because of innate differences between the CS and SSE fields.

There are four other rankings of CS programs of interest to our study. Three of them, those performed by US News and World Report (USNWR), the US National Research Council (NRC), and Business Week (BW) (Business Week, 1997), are basically academic opinion polls. (USNWR and NRC evaluated academic computing programs, and BW ranked the nation’s top computing research labs.) Those three subjective studies present similar findings—the top five CS schools are (USNWR/NRC/BW ranking) Stanford (1/1/1), California-Berkeley (2/3/6), MIT (3/2/3), Carnegie Mellon (4/4/2), and Cornell (5/5/20). It is interesting that these studies have findings quite unlike either ours or the (Geist et al., 1996) study; of the top five schools in these opinion polls, two are not present in either of our lists. This would suggest that even the informed opinions of fellow academics simply do not relate well to the publication frequency of the schools in question. The fourth ranking of CS (and other) programs may be found in the Gourman studies (e.g., (Gourman, 1993)). This is a ranking performed in terms of quality (a much more comprehensive concept than the scholarship we and the other CS studies cover, since it includes things of interest to, for example, potential students). The top five programs in that report are MIT, Stanford, Carnegie Mellon, Cal-Berkeley, and Cornell. Because of the similarity between these rankings and those of USNWR, NRC, and BW, it is clear that they are (once again) ranking something different from what we are attempting to rank here, scholarship (as measured by publication frequency).

Regarding the field of IS, there have been several studies of scholarship. The leading institutions, for example, were studied in Shin Im et al. (1998) and Segars and Simon (1992). The top five in the first study were Arizona, Minnesota, MIT, Carnegie Mellon, and NYU (in the second they were very similar—Minnesota, Arizona, MIT, Texas, and NYU). Only one of these—CMU—is in the top five (or even 15!) of the SSE list. The leading IS institutions in “research performance” over the years 1986–1997, according to Trieschmann et al. (2000), were Minnesota, MIT, Texas, Georgia State, and Carnegie Mellon. These rankings, based on “pages published in leading IS journals”, are quite similar to the other IS studies. (It is interesting to note, however, that the authors of the latter paper, studying a more recent time period (1998–2001), found a considerably different ranking: Maryland, Indiana, Georgia State, Minnesota, and Georgia. Apparently the IS rankings are somewhat unstable, and dependent on the performance of a few top scholars (Dennis and Glass, 2002).)

In any case, the field of IS is clearly distinct from that of SSE.

(The Gourman reports do not explicitly rank IS programs. They do rank a program called “information science”, but that is a library science related field, different from IS.)

5. Correlation of top institutions, scholars

The variance in findings of the IS paper and follow-on study by Trieschmann, noted above, raises an interesting issue—how strong is the linkage between top institution performance and the performance of their top scholars?
We asked one of the authors of that paper, Alan R. Dennis, about the influence of top IS scholars on institutional performance. His response (Dennis and Glass, 2002) was “Most IS research performance rankings are driven by a small number of highly productive people…” He qualified that statement by noting that “IS...is a small discipline”.

With that in mind, we examined our own data, looking to see which institutions were highly ranked because they were the home of one or more top scholars. Table 4 shows the result of that analysis:

We can see that only five of the top 15 institutions housed a top scholar during the study period, and further, that no institution housed more than one. Clearly, although top scholars undoubtedly are influential in driving up the scores of top SSE institutions, they are not critical to the scores the institutions achieve.

6. Study methodology

In this ninth year of our study findings, only papers published during the calendar years 1997–2001 were tallied. We have achieved the goal set at the beginning of this study, to aggregate the most recent five years’ worth of data in order to provide credible and stable ranking of the top scholars and institutions. Next year, for example, we will add data from the year 2002, but drop that from 1997. There may be minor discontinuities each year, as the early year findings are discarded, but we anticipate that in general the future findings of this study will exhibit a satisfying stability.

6.1. Journals

The study findings are heavily dependent, of course, on the journals we include in our survey. The following journals were selected for their relevance to the field of SSE:

- Information and Software Technology (IST), Elsevier Science (formerly Butterworth–Heinemann).
- Software Practice and Experience (SPE), John Wiley & Sons, UK.
- Software (SW), IEEE.
- Transactions on Software Engineering and Methodologies (TOSEM), ACM.
- Transactions on Software Engineering (TSE), IEEE.

These journals were chosen on the basis of a survey of the editorial board of the Journal of Systems and Software conducted in 1991, and there have been no changes in the list of journals since that time. We believe that the board represents a knowledgeable, active, and unbiased source of judgment about the SSE field. (See the inside front cover of JSS for the current members of this board; board turnover has been minimal and the current list is reasonably close to the list at the time the survey was performed.)

Other journals suggested by board members but not included in this study are the following:

1. Communications of the ACM. This journal frequently publishes special issues on a single topic. These theme issues would tend to skew the findings of a study of this kind. A special issue that focused on the design of a chip of one particular vendor, for example, would have caused that vendor to be near the top of our rankings that year even though there were no other papers from that vendor in our data. It is interesting to note that CACM was excluded from the CS study discussed above, as well.

2. MIS Quarterly. This is a leading journal of the IS field, but it was not thought sufficiently relevant to SSE.

3. IEEE Computer. This is a leading journal of the computing field in general, but again, it was not thought specifically relevant to SSE.

4. Cutter IT Journal. This journal presents important findings from the field of SSE practice, but was not thought sufficiently related to SSE scholarship to be included.

Several other journals have been suggested from time to time by others interested in this study. To keep the findings relatively stable, however, we have resisted those suggestions. Now that the study has achieved its goal of presenting five years of data, we will reconsider, in the future, the list of journals examined. However, we will keep any such changes evolutionary in order to minimize turmoil in the ratings.

It may be interesting to note the frequency with which the top scholars publish in these six selected journals. For this 1997–2001 study period, those numbers are presented, by journal, in Table 5.

Of course, these journals publish with different frequencies. For example, TOSEM is a quarterly
(publishing approximately 15 papers/year), whereas IST and JSS publish 15 issues (80 and 100 papers, respectively) per year at present. Thus the opportunities for publication vary rather significantly across journals.

7. Counting schemes

Regarding paper counting schemes, we used the following methods:

7.1. Scholars

- Single authors receive a score of one for each paper published.
- Authors of multiple-authored papers initially received a score equal to their fractional representation on the paper. For example, co-authors each receive 0.5; if there were five authors, each would receive 0.2.
- For author totals, the initial scores for multiple authors are then modified as follows:
  - 0.5 becomes 0.7
  - 0.33 becomes 0.5
  - <=0.25 becomes 0.3

The reason for this transformation is (a) the belief that the original fractional representation unfairly penalizes authors of multiple-author papers, and (b) the transformation was used in a previous similar study of authors in the IS field (Shim et al., 1991). Obviously, this kind of transformation can be misused by authors conniving to increase their scores, as a reviewer of this paper has suggested, but we see no reason to believe that is happening.

7.2. Institutions

- Author raw scores (excluding the above transformation) are attributed to the institution named on the paper.

Two previous studies in the IS field, (Segars and Simon, 1992 and Trieschmann et al., 2000), included length in published pages as part of the score for a paper. We choose not to consider paper length in our scoring scheme. Some similar studies have ranked the participating journals, resulting in papers published in some journals being worth more than others. In our study, all journals included are ranked equally. Many of the journals examined contain regular columns that do not represent research papers and are not refereed. For example, JSS sometimes contains an Editor’s Corner, and SW contains a number of regular columns. None of this material is included in the totals of our survey.

8. Study limitations

There are practical limitations to the number of journals that can be studied for such a survey. This study is limited to six journals (the CS study included 17 journals, but only examined institutions and not scholars).

The publishers of JSS, Elsevier, believed at the outset of this study that it was important to limit the number of journals included. That turns out to have been a wise consideration. The conduct of this survey is extremely time-consuming, and in fact it went through three false starts, each of which foundered on the amount of clerical work to be done. The problem we have encountered is in counting institutions; to date, we have found no easy way to count institutions associated with particular papers (tabulating scholars, by contrast, can be automated through standard library techniques). We rejected the notion of assigning authors to institutions based on a current directory, on the grounds that the mobility of scholars would make such findings inaccurate. (In this study, we count a paper for the institution(s) for which the scholar worked at the time of publication.)

Because of the volume of data involved, this kind of study is also quite error-prone. We have received a number of challenges to our findings over the years; most such challenges result from misunderstandings and not errors, but two recent studies (published in 1998 and 1999) contained errors which were corrected in later issues of the Journal of Systems and Software. We will continue, of course, to attempt to eliminate all errors; but we also welcome input from those who believe they have found them. To aid with alleviating such errors, last year we added a co-author, T.Y. Chen of Swinburne University of Technology, Australia.

Another limitation of our study lies in the difficulty of measuring quality. What we are trying to measure here is the top quality scholars and institutions in the SSE field; that is, those who (which) have made the greatest contribution to the field. But what we are really measuring is the top quantity scholars and institutions, those who or which have published the most papers in the field. In defense of what we have done, we offer these thoughts:

1. Other similar studies have used the same approach.

Both the (objective) CS and IS studies named above and referenced below have counted the number of pa-

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Table 5
Top scholars per journal, 1997–2001

<table>
<thead>
<tr>
<th>Journal</th>
<th>Number of top scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td>IST</td>
<td>7</td>
</tr>
<tr>
<td>JSS</td>
<td>14</td>
</tr>
<tr>
<td>SPE</td>
<td>4</td>
</tr>
<tr>
<td>SW</td>
<td>6</td>
</tr>
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<td>TOSEM</td>
<td>3</td>
</tr>
<tr>
<td>TSE</td>
<td>6</td>
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</tbody>
</table>


pers published, and have not been able to measure the quality of that work.

2. Quality does enter into our measurement, in the following ways:
   a. The papers counted have all been through a peer referee process. Our expectation is that this review process guarantees that the papers are of sufficient quality to have met acceptance criteria.
   b. The choice of journals was made by the JSS editorial board, whom we consider to be a panel of experts. We believe that we have included only high-quality journals in our study. (One reviewer of this paper, however, noted that there are “huge differences” between the journals chosen; certainly there is a wide spectrum, ranging from deep theory to deep practice). We also believe that quality journals tend to choose quality referees to make the selection of high-quality papers.
   (Note that, in subject areas where quality measurement is difficult, the choice of quality is by a panel of expert judges (consider the fields of ice skating and diving, for example). We believe the same approach is valid here.)

3. Perhaps the best measure of quality would be the number of times papers under consideration were actually referenced in the literature of the field (that is, by citation counts). However, there are problems with that approach
   a. Such data is extremely laborious to obtain. We know of no standard library measurement of citations at the level of individual papers (there are, however, such studies for journals).
   b. Even citation analysis has its opponents. For example, in Barrett (1997), some viewed academic citation analysis as “an uncomfortably silly fascination”, “a little bit of fun to see, but... not a really good thing to do with your time”, or (just because something has been cited presents) “no evidence... that anyone has read it”.

It is our belief that citation analysis would be a better scheme for measuring what we are trying to measure, in spite of the opposition noted in b, above; but citation analysis is simply too hard to do.

One final limitation of this study has been noted by some who find its results surprising, particularly in the list of top scholars. It is important to say here that this study does not attempt to identify the most influential or visible people in the SSE field. Such a list would no doubt contain easily recognizable names, which this list often does not. However, any such list would need to be based on objective measures. There is a great danger, one we believe we have avoided here, of publishing a list resulting solely from a popularity contest. And it is often true—in fact, it is almost a truism of academe—that the most scholarly people are not necessarily the best known.

9. Conclusions

This study is one in an ongoing series whose goal is to identify the top scholars and institutions in the field of SSE. Similar studies in related fields (CS and IS) convince us that such a study is meaningful and worthwhile.

By now, at the end of nine years of conducting the study, we believe we can identify with some confidence those top scholars and institutions.

9.1. Top Scholars

1. Richard Lai of LaTrobe University.
3. Barbara Kitchenham of Keele University.
5. Johnny S.K. Wong of Iowa State University.

   (It is interesting to note that there are two newcomers to the top five list this year, El Emam and Kitchenham.)

9.2. Top Institutions

1. CMU and the Software Engineering Institute.
2. National Chiao-Tung University of Taiwan.
3. Bell Labs, Lucent.
4. University of Maryland.
5. National University of Singapore.

   (This top five list is the same as last year, except for changes of position.)

   These ranking contain both predictable and surprising findings.

   Regarding the relationship of the field with its collegial fields of CS and IS, we find

   • a few similarities with CS in the list of top institutions, but still enough differences to be able to say that SSE is a different field from CS,
   • enough differences with the field of IS to say that they are clearly quite different fields.

   (A study of the curriculum and research differences between the fields may be found in Glass (1992) (curriculum), and Glass et al. (submitted for publication) (research).)

References


Glass, R.L., Vessey, I., Venkataraman, R., A comparative analysis of the research of computer science, software engineering and information systems. Submitted for publication.


