An Assessment of Systems and Software Engineering Scholars and Institutions (2000–2004)

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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 in 2000–2004. The top scholar is Hai Zhuge of the Chinese Academy of Sciences, and the top institution is Korea Advanced Institute of Science and Technology.

This paper is part of an ongoing study, conducted annually, that identifies the top 15 scholars and institutions in the most recent five-year period.

Key words: Top scholars; Top institutions; Research publications; Systems and software engineering

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 twelfth in an annual series whose goal is to answer these questions. The first such paper was Glass (1994); subsequently such studies have been published each year. The last report can be found in Glass and Chen (2005).

This is the eighth survey that includes five years' worth of data. (In the earliest studies, 1, 2, 3, and 4 years were covered.) In future surveys, we shall continue to cover the most recent five-year period. This paper reports on the top scholars and institutions for the five-year period 2000–2004.

It is important to note two things at the outset:

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

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

The following six are the leading journals used:

- *Information and Software Technology* (*IST*), Elsevier Science

- *Journal of Systems and Software* (*JSS*), Elsevier Science

- *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 has been no change in the list of journals since that time in order to keep the findings relatively stable.

Here are the findings.

Table 1: Top scholars in the field of systems and software engineering

Rank	Scholar	Journals in which published						Total score	Prev. rank
		IST	*JSS*	*SPE*	*SW*	*TOSEM*	*TSE*		
1	Hai Zhuge, Chinese Academy of Sciences	1	6.9					7.9	13
2	Khaled El Emam, University of Ottawa		3.7		0.5		3.6	7.8	1
3	Magne Jorgensen, Simula Research Laboratory	2.4	2				2.4	6.8	–
4	Barbara Kitchenham, Keele U.	1.7	1.7		1.2		2.1	6.7	2
5	Lionel C. Briand, Carleton U.		1.5	0.5			4	6	5
6	T. Y. Chen, Swinburne U. of Technology	2.1	2.6			0.5	0.5	5.7	12
7	Myoung-Ho Kim, Adv. Inst. Sci. & Tech.	2	3.4					5.4	10
8	Hyoung-Joo Kim, Seoul National U.	2.4	2.8					5.2	3
8	James Miller, U. of Alberta	0.5	4				0.7	5.2	–
10	Robert L. Glass, Computing Trends	0.5	3.6		1			5.1	4
11	Jeff Tian, Southern Methodist U.		1		1.7		2.2	4.9	–
12	Per Runeson, Lund University	1.3	1.8		0.5		1.2	4.8	13
13	Shih-Chien Chou, National Dong Hwa U.	2	2	0.7				4.7	–
13	J. H. Poore, The U. of Tennessee	2.6	0.7	0.7			0.7	4.7	–
13	James A. Whittaker, Florida Inst. of Tech.	1.5			3.2			4.7	13

2. Leading Scholars

The leading scholars in the field are shown in Table 1. These scholars have achieved a score of 4.7 or more during the years covered by this study. The table lists the top 15 scholars with scores ranging from 4.7 to 7.9.

Geographically, seven are from the Americas, five are from Asia-Pacific, and three are from Europe.

Topping the list in the latest survey is Hai Zhuge of the Chinese Academy of Sciences with a score of 7.9. (He ranked number 13 last time.) A close runner up is Khaled El Emam of the University of Ottawa, Canada, with a score of 7.8. (He ranked first in the last two surveys.) In third place is Magne Jorgensen of Simula Research Laboratory, Norway, with a score of 6.8. Fourth is Barbara Kitchenham of Keele University, UK, who scores 6.7. (She ranked second in the last survey.) Fifth is Lionel C. Briand of Carleton University, Canada, who scores 6.0. (He had exactly the same rank last time.)

Sixth is T. Y. Chen of Swinburne University of Technology, Australia, with a score of 5.7. (He ranked twelfth last time.) Seventh is Myoung-Ho Kim of Korea Advanced Institute of Science and Technology, with a score of 5.4. (He ranked tenth last time.) Tied for eighth place are Hyoung-Joo Kim of Seoul National University, Korea (who was third last time) and James Miller of University of Alberta, Canada. Both of them score 5.2. Tenth is Robert L. Glass of Computing Trends, USA, who scores 5.1. (He was fourth last time.)

Eleventh is Jeff Tian of Southern Methodist University, USA, with a score of 4.9. Twelfth is Per Runeson of Lund University, Sweden, who scores 4.8. (He ranked number 13 last time.) Finally, there is a three-way tie for thirteenth place, with a score of 4.7, among Shih-Chien Chou of National Dong Hwa University, Taiwan, J. H. Poore of The University of Tennessee, USA, and James A. Whittaker of Florida Institute of Technology, USA. (Whittaker also ranked number 13 last time.)

Table 1 also shows the respective number of publications of the top scholars in the six selected journals.

We have asked the top scholars to indicate the key words that best describe their research focus. The results are shown in Table 2.

Table 2: Top scholar keywords describing research focus

Rank	Scholar	Research focus
1	Hai Zhuge	Internet systems and software engineering
2	Khaled El Emam	Software quality and measurement, risk management, health informatics
3	Magne Jorgensen	Software cost estimation
4	Barbara Kitchenham	Metrics, evidence, empirical evaluation
5	Lionel C. Briand	Empirical software engineering, software testing and quality assurance, object-oriented analysis and design
6	T. Y. Chen	Software testing and software maintenance
7	Myoung-Ho Kim	Databases and distributed systems
8	Hyoung-Joo Kim	Databases, XML, semantic web
8	James Miller	Software testing, software inspection, empirical evaluation, web-based systems, health informatics, applications of pervasive computing
10	Robert L. Glass	Software problems/solutions, software practice, software as discipline, project failure
11	Jeff Tian	Software quality assurance and testing, software reliability and safety, software measurement and analysis
12	Per Runeson	Empirical software engineering, verification and validation, software quality management
13	Shih-Chien Chou	Information flow control, process-centered software engineering environment (PSEE), software reuse
13	J. H. Poore	Economical development of high quality software
13	James A. Whittaker	Security testing

Table 3: Top institutions in the field of systems and software engineering

Rank	Institution	Journals	Score	Prev. rank
1	Korea Advanced Institute of Science and Technology, Korea	All but *SW* and *TOSEM*	34.20	2
2	National Chiao Tung University, Taiwan	All but *SW* and *TOSEM*	24.25	3
3	Carnegie Mellon University/SEI, USA	All	20.43	1
4	Seoul National University, Korea	All but *SW* and *TOSEM*	17.33	6
5	Fraunhofer Institute for Experimental Software Engineering, Germany	All but *TOSEM*	16.42	4
6	City University of Hong Kong, Hong Kong	All but *TOSEM*	15.32	7
7	Georgia Institute of Technology, USA	All	14.57	11
8	Microsoft, USA	All but *TOSEM*	14.19	9
9	Aristotle University of Thessaloniki, Greece	All but *SW* and *TOSEM*	12.98	15
10	National Cheng Kung University, Taiwan	All but *SPE*, *SW*, and *TOSEM*	12.53	13
11	Iowa State University, USA	All but *SW* and *TOSEM*	12.40	8
12	National University of Singapore, Singapore	All but *TOSEM*	11.85	10
13	AT&T Labs, USA	All	10.98	–
14	Chinese Academy of Sciences, China	All but *SW*, *TOSEM*, and *TSE*	10.50	–
14	Simula Research Laboratory, Norway	All but *SPE*, *SW*, and *TOSEM*	10.50	–

3. Leading Institutions

The leading 15 institutions in the field are shown in Table 3. These institutions have achieved a score that ranges from 10.50 to 34.20 in the five years covered by the study.

Most of the top institutions are from academe. Geographically, seven of the institutions are from the Asia-Pacific region, five are from the Americas, and three are from Europe.

Korea Advanced Institute of Science and Technology tops the list in the latest survey, with a score of 34.20. (It was in second place last time.) The runner up is National Chiao Tung University with a score of 24.25. (It was third last time.) Carnegie Mellon University and its Software Engineering Institute has moved from first place last time to third this time, scoring 20.43. Seoul National University is fourth (from sixth last time) with a score of 17.33. Fraunhofer Institute for Experimental Software Engineering has fallen slightly (from fourth) to fifth position, with a score of 16.42.

City University of Hong Kong now ranks sixth (from seventh) with a score of 15.32. Georgia Institute of Technology is seventh (from eleventh) with a score of 14.57. Microsoft is eighth (from ninth), scoring 14.19. Aristotle University of Thessaloniki has moved (from fifteenth) to ninth, scoring 12.98. National Cheng Kung University is tenth (from thirteenth) with a score of 12.53. Scoring 12.40, Iowa State University now ranks eleventh (from eighth). National University of Singapore ranks twelfth (from tenth) with a score of 11.85. AT&T Labs scores 10.98 as thirteenth. Both the Chinese Academy of Sciences and Simula Research

Table 4: Top institutions and top scholars

Rank	Institution	Top scholar
1	Korea Advanced Institute of Science and Technology	Myoung-Ho Kim
2	National Chiao Tung University	
3	Carnegie Mellon University/SEI	
4	Seoul National University	Hyoung-Joo Kim
5	Fraunhofer Institute for Experimental Software Engineering	
6	City University of Hong Kong	
7	Georgia Institute of Technology	
8	Microsoft	
9	Aristotle University of Thessaloniki	
10	National Cheng Kung University	
11	Iowa State University	
12	National University of Singapore	
13	AT&T Labs	
14	Chinese Academy of Sciences	Hai Zhuge
14	Simula Research Laboratory	

Laboratory score 10.50 as fourteenth. The last three institutions are newcomers to the list.

4. Correlation of Top Institutions and Scholars

We have also looked to see whether institutions are highly ranked because they are the home of one or more top scholars. Table 4 shows the result of that analysis.

We can see that only three 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 SSE institutions, they are not critical to the scores that the institutions achieve.

References

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