# Republication of conference papers in journals?

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ABSTRACT. *Conference proceedings are one of the most important forms of communication for computer scientists. This study investigated the policies of a large number of computer science journals with regard to the republication of papers which had already appeared in conference proceedings. Nearly one-quarter of journal editors would not republish such papers other than in special circumstances (such as a special conference issue), and almost all of the remainder would do so only after substantial updating and expansion of the original paper. Many specified the amount of content that should be new: 30% was the proportion most frequently mentioned. Thus, many sections of text may be identical to the original paper. However, some journal editors do not appear to consider this self-plagiarism provided the original publication is properly cited. Nevertheless, such (re)publication is likely to lead to high similarity scores in CrossCheck; in this field, therefore, journal editors need to exercise particular discretion when evaluating CrossCheck results.*

## Introduction

It is well known that conference proceedings play a much larger role in publishing and communication in both computer and electrical & electronics engineering (EEE) sciences than in other fields.[1–6] However, it is unclear to what extent journal editors in these areas accept articles for publication that have been previously published as conference papers. If editors rely on CrossCheck[7,8] to detect possible plagiarism, they are likely to find papers with a high similarity score simply because they have been previously published as conference papers; technically, this would be defined as self-plagiarism.

In 2011, the present authors[8] carried out a global survey of authors in a range of disciplines. One of the 22 questions was: 'Should papers previously published in conference proceedings legitimately be republished in journals?' 60% of the respondents, across a range of different disciplines, thought that conference papers could properly be republished provided that the author included new content; on average, they indicated that new material should constitute 46% of the revised paper. However, 22% of the respondents considered this to be duplicate publication, even with the addition of new content.

Nevertheless, there were clear subject differences. In the field of computer science/electrical engineering in particular, only 1 respondent (5%) indicated that such papers should be rejected out of hand (the lowest score in any field), while 17 (85%) indicated that it was acceptable to republish a proceedings paper provided that it included new content. However, since the sample was too small to be statistically significant (only 20 respondents to the survey were from the field of computer science/electrical engineering), it was felt necessary to carry out a more in-depth investigation of the issue. Over 300 journals in the field were therefore surveyed about their policy.

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*120 of the 963 editors (12.5%) of 78 of the 323 journals (24.1%) answered one or more questions*

## Methods

Journals were identified by searching seven computer science categories (artificial intelligence; cybernetics; hardware and architecture; information systems; interdisciplinary applications; software engineering; and theory and methods) in Thomson Reuter's Journal Citation Reports (JCR) that was used as the source since inclusion in its database is an indication of journal prestige, and its journals were selected from the leading publishers and societies in the field. A total of 615 journals were listed in these categories. We used access and contact details from journal websites – however, very many of these did not have a satisfactory level of detail or access, and from this sample 323 journals were selected. They included 123 journals from the Institute of Electrical and Electronics Engineers (IEEE), and 96 published by Elsevier. A total of 963 editors-in-chief, handling and/or managing editors were sent an email between 19 July and 2 August 2012, inviting them to participate in the survey on SurveyMonkey (http://www.surveymonkey.com).

The survey contained four questions:

Q1. Do you accept for publication articles which have previously been published in conference proceedings? (Yes/No)

Q2. If 'Yes' to Q1, do you require the author(s) to make changes to the paper before republication? (Yes/No)

Q3. If 'Yes' to Q2, please outline the nature of the changes (Free text response)

Why do you consider that these changes are necessary? (Free text response)

Q4. If 'No' to Q1, why not? (Free text response)

## Results

### Respondents

120 of the 963 editors (12.5%) of 78 of the 323 journals (24.1%) answered one or more questions. As Fig. 1 shows, the majority of respondents are from Western countries, with only 9 from Asia.

Cross-analysis of journal and publisher by Q1's respondents showed that journals are from 10 different publishers: Elsevier, IEEE, Springer, Association for Computing Machinery (ACM), Massachusetts Institute of Technology (MIT), World Scientific, Cambridge University Press (CUP), Wiley, Morgan Kaufmann, and Zarqa University. The largest number of both journals and editors was from Elsevier (79 editors of 39 journals), followed by IEEE (17 editors of 16 journals) (see the grey rows in Table 1).

### Responses

*Q1. Do you accept for publication articles which have previously been published in conference proceedings? (Yes/No)*
For Q1, 120 editors of total 78 journals responded to this question as shown in Table 1. 93 (77.5%) editors of 53 journals chose 'Yes' and 27 (22.5%) editors of 25 journals chose 'No'. There were interesting differences
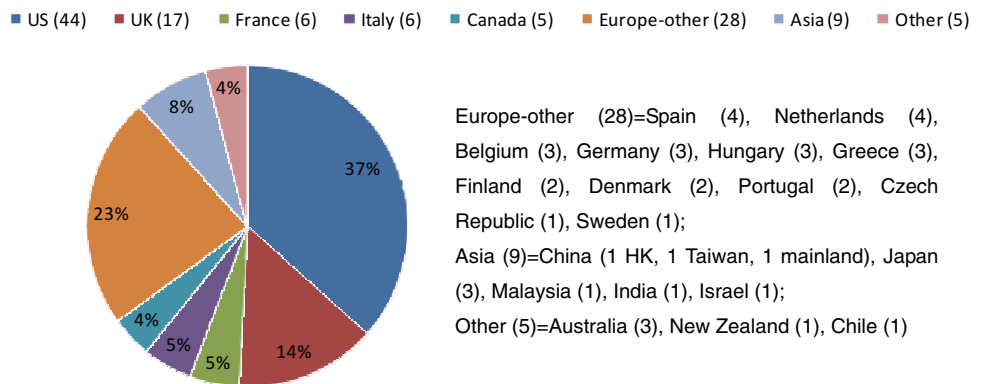


Europe-other (28)=Spain (4), Netherlands (4), Belgium (3), Germany (3), Hungary (3), Greece (3), Finland (2), Denmark (2), Portugal (2), Czech Republic (1), Sweden (1);
Asia (9)=China (1 HK, 1 Taiwan, 1 mainland), Japan (3), Malaysia (1), India (1), Israel (1);
Other (5)=Australia (3), New Zealand (1), Chile (1)

Figure 1. Geographic distribution of respondents to the survey (*n* = 120).

**Table 1. Responses to Q1 by editor and by journal, grouped by publisher**

| Item | Answer to Q1 | Publisher | | | | | | | | | | Total, n (%) |
|------|------|----------|------|----------|-----|---------------------|--------------|-----|-------|----------------------|---------------------|--------------|
|      |      | Elsevier | IEEE | Springer | ACM | World Scientific | MIT Press | CUP | Wiley | Morgan Kaufmann | Zarqa University |              |
| Editor | Total | 79 | 17 | 8 | 5 | 3 | 3 | 2 | 1 | 1 | 1 | 120 |
|        | Yes | 61 | 13 | 6 | 5 | 3 | 2 | 0 | 1 | 1 | 1 | 93 (77.5%) |
|        | No | 18 | 4 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 27 (22.5%) |
| Journal | Total | 39 | 16 | 8 | 5 | 3 | 3 | 1 | 1 | 1 | 1 | 78 |
|         | Yes | 22 | 12 | 6 | 5 | 3 | 2 | 0 | 1 | 1 | 1 | 53 (68%) |
|         | No | 17 | 4 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 25 (32%) |

between the two publishers with the most journals represented in the responses to this question: 18 (22.8%) of the 79 editors of 17 (43.6%) of the 39 Elsevier journals, but only 4 (23.5%) of the 17 editors of 4 (25%) of the 16 IEEE journals chose the answer 'No'.

Note that 7 of the 27 respondents to Q4 (who had answered 'No' in Q1) clearly indicated that they would, in fact, publish conference papers which had been significantly extended with new material; if their responses would be construed as 'Yes', the percentage saying 'Yes' is actually 83.3% [(93 + 7)/120], and the percentage saying 'No' is 16.7% [(27 − 7)/120].

*Q2. If 'Yes' to Q1, do you require the author(s) to make changes to the paper before republication? (Yes/No)*
93 editors of 53 journals responded to this question. 92 (99%) answered 'Yes' and just one answered 'No'.

*Q3. If 'Yes' to Q2, please outline the nature of the changes; why do you consider that these changes are necessary? (two parts; free text responses)*
91 editors of 53 journals responded to this question. One made clear that the aim of his publication is to abbreviate papers of general interest for its specific (magazine) readership – this response has been considered a negative response in the following analysis. One other stated that, while the journal would not republish papers previously published in conference proceedings, it would publish expanded versions of posters, short papers, etc., from such proceedings, while another stated that only conference papers previously published by the same publisher (a society) would be considered. When studying the

91 free text responses in detail, the authors observed a number of particularly frequently occurring words and phrases. Frequency analysis was therefore carried out for a number of these words and phrases. For example, in the responses to the first part (Pt1) of the question, 'new' occurred 43 times; '%' occurred 40 times; 'more' occurred 27 times; 'exten*' (extend, extension, etc.) occurred 19 times; 'add*' (adding, added, additional, etc.) occurred 18 times; 'result/results' occurred 17 times; 'substanti*' (substantial, substantive) occurred 16 times; 'detail' occurred 12 times; and 'experiment' occurred 10 times.

In the responses to the second part (Pt2) of the question (where respondents were asked to give their reasons for the changes requested), the need to avoid duplicate publication was mentioned 43 times. The more rigorous peer-review requirements of journals were mentioned 11 times; the length constraints of proceedings were mentioned 8 times; and copyright issues were mentioned 7 times.

Further examination of the responses in which these key words and phrases occurred made it possible to classify them as follows:

### Q3 Pt1 – changes required

#### Inclusion of new content

81 (90%) of the 90 positive respondents made explicit mention of the necessity to include new or extended content. 38 respondents mentioned a specific minimum percentage of new content. The most commonly mentioned percentage (22 respondents) was 30%. One mentioned 75%, two 70%, three 60%, five 50%, two 40%, one 35% and two 20%. (It should be noted in addition that 7 respondents

*the need to avoid duplicate publication was mentioned 43 times*

who had said 'No' to Q1 actually indicated, in their responses to Q4, that they would publish a significantly expanded version of a conference paper; of these, one mentioned 40% and one 50%.)

While some stressed the need for more detailed discussion, background, etc., others specifically mentioned the need for additional results, proofs, etc. In particular, 18 (20%) particularly mentioned the need for additional or expanded experimental or theoretical results, and 9 (10%) the need for more or extended proofs.

It was mentioned repeatedly that a conference paper is generally little more than an 'extended abstract', often prepared in haste and arguably with lower standards of acceptance: 'A conference paper (with page limit) considered as an extended abstract should be published in a Journal in a complete form.'

As one respondent made clear: '[The] original paper needs to be cited and differences explained'. One respondent also mentioned the importance of using original text, rather than merely cutting and pasting; another specifically mentioned avoidance of self-plagiarism.

## Q3 Pt 2 – reasons for changes

83 respondents meaningfully addressed the second part of the question. Their responses could be classified under six main headings:

### 1. Adding value/improving quality

43 responses (51.8%) mentioned that the journal version should be of higher quality and thus of greater value to the community: 'Extended paper should add more value, more information, and more details'; 'the journal's role is to publish expanded, more thoroughly developed versions of the research'.

### 2. Avoiding duplicate publication

The avoidance of duplicate publication, since it served no useful purpose for readers, was explicitly mentioned by 28 respondents (33.7%): 'Re-publishing the same paper would be duplicating content that is already available'; 'the conference version is already peer reviewed and archived'; 'No point [in] having the same article twice because confer-

ence proceedings are now available online'; 'Conference papers are easily accessible on the web. No need to republish'.

### 3. Overcoming the constraints of proceedings

14 respondents (16.9%) explicitly mentioned the constraints on extent, style, etc., imposed by proceedings publication. They saw publication of the full paper in the journal as the way to overcome these constraints: 'Conference papers have obviously limited number of pages and quality of journal papers should be better than conference ones'; 'Conference publications tend to be short and therefore incomplete. They also tend to be preliminary in nature, sometimes errors are present'; 'The aim of "short" submissions is different from that of journal articles but often is up-to-the-minute work which can be put in context and expanded upon in a journal submission.'

### 4. Higher peer-review standards

6 respondents (7.23%) mentioned that the paper would go through a more rigorous peer-review process: 'reviews are rarely as thorough as for a journal'; 'The conference review process is hurried and light, concentrating on innovation rather than long-lasting significance or importance'; 'Permanent archival journals require rigorous attention to details to satisfy expert reviewers'; 'the standards for journal publication are higher.'

### 5. Copyright issues

Copyright issues were mentioned by 5 respondents (6%): 'conference papers in CS are proper publications – copyright resides with the publisher in many cases'.

### 6. Journal policy

3 respondents (3.6%) stated that the required changes were the journal's or society's official policy.

## Q4. If 'No' to Q1, why not? (Free text response)

27 editors from 25 journals answered this question. Many of the respondents appear to have understood Q1 slightly differently from those who answered 'Yes' to Q1, assuming that

*it was mentioned repeatedly that a conference paper is generally little more than an 'extended abstract'*

**Table 2. Occurrence of key words and phrases in response to Q4**

| Term (key words) | Occurrences Q4: If 'No' to Q1, why not? |
|---|---|
| already+twice+duplicat*+republi*+recycling | 16 (5+2+3+5+1) |
| novel+original | 6 (1+5) |
| polic* | 4 |
| copyright | 2 |
| % | 2 |
| self-plagiarism | 1 |

it referred to verbatim republication. Perhaps unsurprisingly, therefore, their responses were frequently the obverse of the responses of those who answered 'Yes' to Q1; in 7 cases (26%) the publication policies one can deduce from their responses are to all intents and purposes identical (i.e. they would not republish verbatim, but they would publish a significantly different and expanded version) – see point 2 below.

In their responses, terms referring to duplicate publication were mentioned 16 times (Table 2). The journal's insistence on publishing only novel/original material was mentioned 6 times. The policy of the publisher of the journal and/or of the original conference proceedings was mentioned 4 times. Copyright issues were mentioned twice. The percentage of new material required to justify publication was also mentioned twice: one respondent specified more than 50%, the other 40%. One respondent specifically mentioned the issue of self-plagiarism.

Their reasons fell into the following categories (points):

*1. Duplicate publication (mentioned in 16 responses)*

'Since conference proceedings are already widely available on the Internet'; 'A paper should not be published twice in different media.' Note that duplicate publication was also mentioned in 28 responses to Q3–Pt2 (those who replied 'Yes' to Q1). Thus 28 + 16 = 44 respondents (36.7%) in total mentioned the necessity of avoiding duplicate publication.

*2. Would publish, but only if expanded with new material (7 responses)*

'We only accept such papers if it can be dem-

onstrated that more than 50% of the material is new.' Note that the same stipulation was found in 81 responses to Q3–Pt2 (those who replied 'Yes' to Q1). Thus in total 81 + 7=88 (73.3%) of respondents mentioned the need to include new material.

*3. Prefer original papers (7 responses)*

'We prefer original conceptual papers which are innovative'; 'we publish only original contributions.'

*4. Journal policy (3 responses)*

'We follow the IEEE policy on self-plagiarism'.

*5. Copyright issues (3 responses)*

'Often conference proceedings require transfer of copyright, and thus we cannot publish the same material'. Clearly these respondents have understood the question to refer to verbatim republication.

*6. Only publish conference papers in specific circumstances (2 responses)*

'These would be part of special issues based on the best papers in a specific conference'; 'We would typically set up special journal issues, peer-review the papers, and published the ones that were acceptable.'

## Discussion

As noted, in the field of computer science, conference proceedings are known to be one of the most important means of communicating one's findings, although in current years, there has been some debate on this.[9–14] Vardi, editor-in-chief of the *Communications of the ACM*, wondered 'whether we are driving on

*in computer science, conference proceedings are known to be one of the most important means of communicating findings*

the wrong side of the publication road'.[13] The republication of substantially the same papers in journals used to be common practice, but is now increasingly discouraged.[15,16] Duplicate publication and self-plagiarism (even when the original publication is properly cited) are considered poor academic publishing;[8,16,17] the tools to detect these practices are now available with Crosscheck.[7,18] As one of the respondents to this survey noted:

> Before the mid-1990s, many societies encouraged their members to present an earlier version of their papers at the society conferences [and thus to publish them in the conference proceedings] before they submitted the full paper to the society transactions. Examples include the IEEE Control Systems Society etc., with which I am involved. If you check out their publications in the 1970s–1990s, you will find that many papers acknowledged earlier publication of the same papers in IFAC conference proceedings. Since the mid-1990s, however, the situation has gradually changed. Many societies (for example, IEEE as a whole, including the above-mentioned societies) started to discourage their members from doing this. However, due to long-established habits, many authors – especially those from older generations – are still doing the same, or something similar. Likewise, most societies are not very strict on limiting this common practice.

Indeed, in early 2000, COPE met a typical case on duplicate publication based on conference proceedings for journal editor reference.[17]

In recent years, many journals have had explicit policies on this point,[16,18] – for example, *Artificial Intelligence Journal* on its website stresses: 'In particular, a previous conference publication by the same authors does not disqualify a submission on the grounds of novelty.' And as a leading publisher, Elsevier also has a strict policy on resubmission of conference papers for its journal editors.[19]

Analysis of the responses to this survey indicate very clearly that journal editors are almost unanimously opposed to the republication of conference papers in exactly the same form: 'There is no need to publish the same paper twice, the journal provides a longer format for more complete presentation;

that is its purpose.' Their reasons are mainly to do with avoiding duplicate publication, self-plagiarism and copyright problems. As Table 1 shows, 32% of responding journals absolutely decline to republish conference papers under any circumstances. The other 68% are willing to publish a version of papers that have previously appeared in conference proceedings, but 99% of these insist that the authors must change the content, adding valuable new material. They generally insist on a significant amount of new material (actual percentages mentioned range from 20% to 75%, most commonly 30%).

## Conclusions

Republication of a paper which has previously appeared in conference proceedings has long been relatively common and widely accepted in the field of computing and EEE. However, some journals now question the value of doing so and prefer to focus their content on completely novel work. Those that do republish conference papers will generally only do so if the paper has been substantially reworked to include additional detail which could not be included in the conference paper, such as detailed proofs or wider comparison with other work in the field. The reasons put forward are that duplication of publication is unnecessary, and that journals have higher standards, and more space, in order to provide their readers with greater value.

However, the majority of those respondents who named a figure felt that as much as 70% of the paper could remain unchanged from the previously published version, which many would consider self-plagiarism. It is thus inevitable that plagiarism detection tools such as CrossCheck will come up with very high similarity scores for such papers. It follows that editors in this field, in particular, cannot rely on CrossCheck, but must use their reviewers' and their own judgement to determine whether or not a version of paper previously published in conference proceedings has sufficient additional value to warrant publication (it goes without saying that the original publication must be properly cited in all cases).

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*journal editors are almost unanimously opposed to the republication of conference papers in exactly the same form*

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