

A Short Course for Ph.D. Students in Engineering: "How To Review Research Papers and How To Respond To Reviewer Comments"

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Abstract—

Index Terms—

I. INTRODUCTION

Publication of scientific research results is a process consisting of a number of important stages. Each stage includes specific procedures and deals with specific notions, so the Ph.D. students, the most important driving force of the publication process, have to be properly educated before they enter the publication process:

- 1) First, while they write a paper, they have to know how would a typical paper be reviewed by an anonymous reviewer,
- 2) Second, if their paper is conditionally accepted for publication, they have to know how to respond to reviewer requests.

The first type of knowledge is needed also if they are asked to be reviewers; that may happen if their major professor gets a reviewing request and has no time to respond to it.

If they are asked to do a reviewer, the second type of knowledge is also needed, so they know how to treat and evaluate the responses of authors to their comments.

Consequently, this paper has two parts and includes two homework assignments: how to do a review and how to respond to reviewer comments.

II. HOW TO REVIEW

The review process includes two major phases: formal review and quality review. Formal review checks if all formal

requirements of the journal are met (some useful hints for formal review are given in the appendix#1). Quality review checks if the paper is of a good enough quality, to justify publication in the journal it is targeted to (it is advisable also to do an internal review, prior to submitting a paper, which is elaborated in more details in appendix#2).

How to do the quality review, that depends on the type of the paper under review. The types of papers under consideration here are:

- 1) Survey paper,
- 2) Simulation-based comparison (SBC) paper,
- 3) Idea paper (or a position paper),
- 4) Research paper (or a short communication paper).

No matter what paper type is under review, the quality analysis includes, but is not limited, to the following elements:

- 1) Quality of the original contribution,
- 2) Quality of the analysis,
- 3) Quality of the presentation of the results of the analysis.

These elements are obligatory, but not the only elements that one should look at. Specific topics and viewpoints may require more elements, each of which will also need a careful consideration.

Quality of the original contribution implies:

- 1) The contribution must be original,
- 2) The contribution must be better compared to the best one from the open literature,
- 3) The set of conditions under which the contribution is better must be wide enough, so it corresponds to an application that is in relative demand. In other words, there must exist an application for which the introduced solution represents an improvement.

Existence of such a set of conditions must be proved using appropriate mathematical tools. For a survey paper, that means:

- 1) No other survey exists on the chosen topic,

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- 2) If another survey does exist, this one either has a different view angle or it is much newer and covering examples not covered by previous surveys; should also include a criticism of the surveyed research,

- 3) The survey covers a field that has an important application.

For a SBC paper, this means:

- 1) An original simulator was used, or a public one with a large enough level of customization to justify originality,
- 2) The paper is better, compared to other existing ones, if any,
- 3) The covered field is important and its importance grows.

For an idea paper, this means:

- 1) The idea is original, has potentials and its importance will grow,
- 2) An indication (possibly a rough analysis) is included to demonstrate that the idea has potentials,
- 3) It is said how will the follow up rigorous analysis be conducted.

For a research paper, this means:

- 1) The idea is original, better and the importance of the problem if solves will grow,
- 2) The proof that it is better is rigorous, and has one or two or all three of the following components: math, simulation, implementation (the level of presence of these three components determines the journal to be targeted),
- 3) It was shown that applications are wide and technology is or will be capable of implementing the desired application.

When it comes to the analysis, here is what holds.

More specifically, contributions of a survey paper are:
{SLIKA}

More specifically, contributors of a SBC paper are:
{SLIKA}

More specifically, contributors of a idea paper are:
{SLIKA}

More specifically, contributors of a research paper are:
{SLIKA}

When it comes to the presentation, the following elements should be present in the paper:

For survey papers:
{SLIKA}

For SBC papers:
{SLIKA}

For idea papers:

{SLIKA}

For research papers:

{SLIKA}

Note that not all journals accept all types of papers!

Survey papers get accepted by only about 10% of journals. The SBC papers are welcomed by only about 50% of journals. The idea papers would be taken into consideration by only about 5% of journals. Research papers are published by over 95%, but not by 100% of journals.

This part of the course includes four homework assignments; each one to review a different type of paper:

- 1) Survey,
- 2) SBC,
- 3) Idea,
- 4) Research.

This was done for papers already published in IEEE or ACM journals. The students are asked to assume that these papers are not already published, but that they arrived to them with a request to review.

III. HOW TO RESPOND TO REVIEWER COMMENTS

It is not enough just to modify the paper to meet the requirements of the reviewers. One must also write a cover letter saying how was each comment of each reviewer addressed.

It is the best if the reviewer itemizes the comments, so the author can go item by item (comment by comment).

If that is not the case, the author must make an effort to split the reviewer's essay into a number of elementary requirements, i.e. to itemize it. After that, each small requirement is addressed in the response to reviewers.

No matter how is the set of requests itemized (by the reviewer or by the author), the author has to respond to each one.

Possible response types are:

- 1) The comment is accepted as is, and it is explained what was done/written in response to it,
- 2) The comment is not accepted and the reasons for that are explained thoroughly; also, it has to be specified what text was included into the paper, so the reader, while reading the paper after publication, does not ask himself/herself the same question as the reviewer,
- 3) The comment makes full sense, but is not doable with the knowledge and resources of the author(s), and that is suggested to be the subject of a follow up paper; the same is explained in the paper to future readers; the reviewer is given the exact text that was added to the paper.

Of course, partial solutions, in between the above three extremes are also possible. The major axiom is to be honest to the reviewer, even if it is believed that the full honesty may lead to rejection of the paper.

In the classroom, the students are shown three responses of three reviewers of a single paper, as well as the three responses of the author(s) put into a single cover letter. Each review comment and each author response are analyzed. After the analysis, the students are given a homework assignment. This part includes only one homework assignment. Students are given a paper (a past paper of the teacher) and the three comments of three reviewers, and are asked to write the cover letter. In order to be able to do that, students had to read the paper and to understand each and every part of it.

IV. STAGES OF THE PUBLICATION PROCESS

In order to be able to place all the above said trees into the forest, more light had to be shed onto the entire process and stages of it. Therefore, a part of the course is on that subject, and here is what is being said to students:

Stage 1: Writing of the paper

Stage 2: Selecting of the journal to submit

Stage 3: Submitting

3.1. Waiting for information that the paper arrived to the "office" of the journal, and that the EIC has passed the paper to the appropriate Area Editor, to start organizing the review process.

3.2. Waiting for review comments to come, together with the Area Editor decision (accept, conditionally accept, or reject).

3.3. If "Conditional Acceptance", then make a new response letter and modify the paper, which often times implies an extra research effort.

3.4. Resubmitting of the modified paper and new waiting.

3.5. Iterating.

3.6. Once the paper is accepted and the info is received that it is passed to production, waiting till the production responds.

3.7. While waiting, some updates are still possible!

4. Production activities

4.1. Language

Make sure the essence of your words is not changed during the language editing of your paper.

4.2. Layout

After the layout is received, the only changes which are possible are the ones that do not change the page boundaries.

4.3. Final galley proofs

One can only make changes at the sentence level.

4.4. Assignment of the DOI number

4.5. Assignment of the publication date

4.6. Removing the paper off the web site of the author.

4.7. After your paper gets its DOI, it becomes visible via web, and others can reference it.

5. Waiting in the publication queue.

6. Updating of search engines.

The final remark for the students:

It is great to have a paper published, but there is something else that has a much higher value: for the paper to be referenced. Therefore, the most important thing is to write only the papers that many will reference.

V. ANALYSIS

It is useful for students to know selected numerical values related to the process of reviewing; that is how they get to remember what is important. Important issues are better remembered if associated with a story that contains concrete numerical values. The figures to follow give appropriate numerical values. The captions of these figures explain the rationales behind.

Figure 1 defines the set of possible reviewer groups (those referenced in the paper, those who are the most cited at Google Scholar for the keywords derived from the title of the paper to be reviewed, those who submitted papers for the same conference/journal, those who are in the carefully generated database related to the topic covered by the paper to be reviewed), and to what extent these people respond to reviewer request, and if they agree to review, how critical they are.

55% 01% THOSE REFERENCED IN THE PAPER
15% 90% THE MOST CITED ONES AT GOOGLE SCHOLAR
55% 70% THE PEERS FROM THE SAME CONFERENCE/JOURNAL
75% 50% THOSE FROM A SPECIALIZED DATABASE

Figure 1: Probability for a reviewer to respond to a reviewing request, and the probability to be negative about a reasonably good paper (data generated for the year 2010).

Figure 2 gives the same data as Figure 1, but for three different time moments 10 years apart, for the VIPSI series of conferences []. The tendency is visible, for the reviewers to be less and less cooperative about reviewing requests, which is probably a consequence of the fact that the number of conferences/journals increased a lot over the past decades.

75 65 55
40 20 15
65 60 55
90 80 75

Figure 2: Data of Figure 1, for 1990, 2000, and 2010.

5W ...
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0

Figure 3: Correlation of the reviewing delay and impact factor

Figure 3 gives the distribution of reviewing delays for journals with different IF (impact factor). Here only the declared reviewing delays are taken into account. There is a logical expectation that the impact factor is higher for those who publish archival papers and therefore take longer to review. Delays are expressed in weeks (W).

40% 20% 08% 03% <0.1%
h=0 h=5 h=10 h=20 h=40

Figure 4: Correlation of reviewer cooperativeness and the reviewer h index.

Figure 4 demonstrates that experts (those who can provide a really good response) are typically busy and non-cooperative. Those really cooperative are usually those less successful and consequently can not provide an extremely good response.

VI. CONCLUSION

APPENDIX

Appendixes, if needed, appear before the acknowledgment.

- 1) Guidelines for formal review,
- 2) Issues of importance for an internal review.

REFERENCES

[1]

First A. Author (M'76–SM'81–F'87) and the other authors may include biographies at the end of regular papers. Biographies are often not included in conference-related papers. This author became a Member (M) of IEEE in 1976, a Senior Member (SM) in 1981, and a Fellow (F) in 1987. The first paragraph may contain a place and/or date of birth (list place, then date). Next, the author's educational background is listed. The degrees should be listed with type of degree in what field, which institution, city, state, and country, and year degree was earned. The author's major field of study should be lower-cased.

The second paragraph uses the pronoun of the person (he or she) and not the author's last name. It lists military and work experience, including summer and fellowship jobs. Job titles are capitalized. The current job must have a location; previous positions may be listed without one. Information concerning previous publications may be included. Try not to list more than three books or published articles. The format for listing publishers of a book within the biography is: title of book (city, state: publisher name, year) similar to a reference. Current and previous research interests end the paragraph.

The third paragraph begins with the author's title and last name (e.g., Dr. Smith, Prof. Jones, Mr. Kajor, Ms. Hunter). List any memberships in professional societies other than the IEEE. Finally, list any awards and work for IEEE committees and publications. If a photograph is provided, the biography will be indented around it. The photograph is placed at the top left of the biography. Personal hobbies will be deleted from the biography.