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National University of
Singapore (SG), Saarland
University (DE)

*Abhik Roychoudhury
(Program Chair) +
Andreas Zeller
(General Chair)*

[ISSTA 2016 REVIEWING]

Double Blind Reviewing in ISSTA 2016

Prologue

In May 2015, during the ISSTA steering committee meeting, it was decided to adopt double-blind reviewing in ISSTA for a period of three years – 2016, 2017, 2018. The pros and cons of double blind reviewing were extensively discussed. The decision was to adopt a "light" double-blind reviewing whether the author identities will be revealed to PC ahead of the PC meeting. It should be stressed that the argument for double-blind reviewing was to clear any unconscious bias in the minds of PC, and to avoid any perceptions of bias in the mind of the authors. We are not worried about any conscious bias issues, as the reviewing model adopted will reveal.

Statistics and Basic Information

ISSTA 2016 received 147 submissions – higher than past years. The number of submissions in the last four years in ISSTA can be enumerated as follows.

- ISSTA16 : 147
- ISSTA15: 136
- ISSTA14: 128
- ISSTA13: 124.

The reviewing model adopted in ISSTA 2016, involved several mechanisms for the authors to respond to comments or concerns from the reviewers. The timeline of the review process was as follows.

- January 29 – Paper submission
- Feb 11 – First phase paper allocation
- Mar 12 – first phase reviews due
- Mar 15-16 – Author response
- Mar 21 – Second phase paper allocation
- April 11 – second phase papers due
- April 16, 17 – ISSTA16 PC meeting

Salient Features

We share certain salient features of the review process.

Double Blind Review: ISSTA 2016 adopted double-blind reviewing for the first time. This means that author identities were not disclosed to the PC members up to the point where they submitted their review.

Light Double Blind: We adopted a double blind process, where author identities were revealed ahead of PC meeting, in particular three days ahead of the PC meeting. This is to allow the possibility of checking against author's prior work ahead of the PC meeting, and getting a full picture when the papers are discussed in PC meeting.

Two phase review: ISSTA2016 adopted a two-phase review process, and yet all papers received 3 reviews. This was done with the philosophy that each paper should receive sufficient review – even if it is not accepted.

Author Response: At the end of the first phase, the authors had a two-day author response period to respond to the two reviews from the first phase.

Artifacts: During the author response, the authors also had the flexbility of uploading an artifact for a separate evaluation by Artifact Evaluation Committee (AEC). The artifacts were uploaded separately to a separate submission system. The artifacts are not anonymous. One of the AEC co-chairs was a member of the PC – and was excused from the second phase of paper reviewing. Instead the AEC co-chair could give inputs on the artifact during the PC meeting. Since the artifact submission was not mandatory we could only use the artifacts to argue a paper's case more positively.

Handling conflict detection or what are the impediments in implementing double blind

The reviewing system used in ISSTA 2016 was Easychair. Easychair allows for anonymous reviewing, it is an option in the configuration. One issue that was discussed extensively was **conflict detection**. Since PC members cannot see author identities they cannot declare conflicts for specific papers. Of course, the authors can declare conflicts against PC members – but it is useful to get the PC member's input on this matter – even without revealing author identities of individual papers. We took a two-pronged approach for solving this conflict-detection problem.

a. We created the set of all authors of all submitted papers to ISSTA16 and created a super-set of this set. PC members were asked to mark conflicts against this set of all authors in a customized page (for each PC member, a separate page was created).
b. We liased with the Easychair team to get the implementation of author-declared conflicts. In this *new feature of Easychair*, the authors not only declare conflicts against PC members – they also give a reason for the conflict, and it is up to the conference chairs to validate or refuse the conflict.

It is useful for the community to know how well such conflict detection worked, since this is one of the important issues in implementing a double-blind review. As mentioned earlier, we lifted the veil on author identities a little more than 3 days ahead of the PC meeting. As a result, the PC members had enough time to check on the author's prior work ahead of the PC meeting. The PC members had enough time to also check whether any conflicts had been inadvertently missed. In the case of ISSTA 2016, there were two cases on two papers that were reported when the veil on author identities were lifted, and these two cases were promptly resolved (by adding the appropriate conflicts).

When to lift the veil?

We examined and discussed various views on when to disclose the author identities. One view that was discussed is to lift the author identities as soon as a reviewer uploads the

review. At the other end of the spectrum, there exists a possibility of disclosing author identities at the PC meeting.

We adopted an in-between position where the author identities were disclosed as soon as the last review came in. In particular, the author identities were disclosed a little more than 3 days before the PC meeting. Usually PC members seemed to comment that the time was sufficient for them to check any relevant literature in light of the author identities, for the sake of reviewing. Again, this could be a subjective matter and various timelines may work for various Program Committees.

Comprehensive list of Implementation Issues for Double Blind Reviewing

For conferences mulling over whether to implement double blind reviewing – one concern is the amount of work to implement it without slip-ups. In the following we have provided a list of measures we had to put in place for implementing double blind reviewing in ISSTA 2016.

The PC chair worked with easychair, to get the conflict detection implemented in easychair. This was one of the first activities we put in place, however it is a one-time effort and future conferences can use this feature for authors to declare conflicts with PC, by giving a reason.

When the submissions came in, the PC chair needs to check the submissions against anonymity violations – most obviously declaring author affiliations in the PDF of the paper. One useful feature is to add a button in the easychair submission form – "I confirm that my submission is anonymized". This worked well, in practice, for ISSTA 2016.

In some rare cases, the acknowledgments declared some identity. In these cases also the authors need to either re-submit (if there is time), or the text can be covered by PDF editing – before the paper is sent out for review to the PC.

During paper bidding, we prepared scripts for PC members to declare conflicts against a list of authors – this author list was obtained by collating the list of all ISSTA16 submitters and taking a super-set of this set (by adding published authors of past ISSTAs). For each of the 25 PC members, a conflict declaration page was automatically generated – and the PC could submit their conflicts online. Once the PC submitted their conflicts against persons, some additional scripts written by us converted these declared conflicts to conflicts against papers. These conflicts were then input into the submission system.

If there is an author response period (ISSTA 2016 had one), for some papers authors may send some concerns to the PC chair by email. Sharing any of these comments by email to the PC will be problematic since it may violate double-blind requirements. So, only the technical content of these concerns have to be carefully uploaded by PC chair into the submission system (which was easychair for our case).

Some papers will have references which say that "anonymized due to double blind". If any of these references catch the attention of the reviewers – meaning that reference is deemed to be crucial for the paper's decision-making, the PC chair will need to contact the authors for these references. In ISSTA 2016, this liasing with authors for references – needed to be carried out only for 2 out of the 147 submissions. Depending on the situation, these references could also be made available to the PC, once the author identities are known.

The three day period once the author identities were lifted was useful for sourcing a reference from the authors in one case.

Last but not the least, once author identities are lifted, there could be rare cases where the PC accidentally did not declare conflict – since the PC declares conflicts against a list of people as opposed to a list of papers. We had only two cases where a PC had forgotten to declare a conflict, one where the conflict was added, and another where we sourced another review ahead of the PC meeting. Note that for these purposes having a light double-blind model was beneficial since once again.

Reflections

Double blind reviewing was implemented in such a way that any unconscious bias is eliminated. We are not worried about any conscious bias. Hence, we did not suppress the reviewer identities in Easychair. Double blind reviewing also gives a clear message to the authors that efforts are made to ensure fairness in reviewing.

We did not have cases where the PC changed their stand substantially once the veil on author identities was lifted. This effectively means that once the PC took a stand on a paper without knowing the author identity – they did not change their stand once they saw the author identity.

Lifting the veil on author identities few days before the PC meeting seems to be useful. The 3 day period that we had for ISSTA 2016 seemed to be sufficient – but for larger conferences it may be useful to lift the veil as soon as the review is entered.

One parting thought that we could share for other conferences considering double-blind is the message it sends out to authors, apart from the review process itself. At least 4 of the 37 papers accepted at ISSTA 2016 seem to have been authored by researchers where none of the authors have a past ISSTA or ICSE publication. In other words, double blind reviewing could possibly send a message to help grow the community in a meaningful fashion. In the past ICSE used to have a **mentoring program** which was precisely for this purpose – growing the community. However, the mentoring program requires submitting drafts much ahead of the submission deadline and may not have had that many takers in the past. Instead of mentoring, double blind reviewing could potentially help grow the number of first time submitters into our research community. This is an observation that will need to be studied further in the future.

Dated: 27 April 2016.