

Cybersecurity Research Seminar Fall 2015

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#8: Paper Review Tips & Tricks

Reminders

- Please send me topics for the role-presenting activity
- Presentations this Friday
 - Using WebEx for 4 tightly timed presentations, it would be best to get all of the presentation slides on the lecturn PC in Pgh and lead presentations from there
 - Audio can come from both sides

Class #8

Peer-Review and Giving Good Feedback on a Paper

Why is Reviewing Important?

- Learning how to review papers makes you a better reviewer (obviously)
- Helps you as an author because you know what other reviewers are likely to look for
 - Also, what is very important and what is less important
- Giving good feedback to others in your community helps to make the community stronger and better

Preliminary Questions

- Some questions to figure out before reviewing a paper:
 - Why am I being asked to review this paper?
 - Is it a conference submission that I'm helping to decide acceptance or rejection?
 - Is it a colleagues future/potential submission that they are asking for feedback about?
 - What are the expectations of those who will be reading this paper at a later time?
 - What's in it for me?

Calibration to Expectations

- In order to properly evaluate a paper and give good feedback to the authors, you need to understand the goal of the paper
 - Conference/workshop/journal publication
 - Technical report for colleagues
 - Proposal
 - Etc.
- Often, the context will make it clear, but if not, some side-channel to the authors is needed

Value to the Reviewer

- Understanding the review process helps you to become a better writer
 - If you know what people are looking for, you know what to give them
 - If you think about how people interpret your story (and acknowledge parts they could misunderstand), you can tell your story in a better / clearer way
- You can have a stake in the community

Reviewing vs. Reading

- There are major differences between reading a paper and reviewing a paper
 - Goal of reading: to understand story, goals, and content
 - Goals of reviewing:
 - 1) Determine suitability of a submitted paper for a particular venue, community, etc.
 - 2) Provide helpful / constructive feedback to authors
 - Reviewing is necessarily more difficult and requires more work than reading

What are the major things to look for when reviewing?

Importance or Potential Impact

- One of the most important things to search for when reviewing a paper is the importance or potential impact of the work
 - Not all authors will explicitly state this
 - Others may understate or overstate
 - Reviewer is expected to either validate what they are saying or uncover what they are not
- This doesn't necessarily have to be realized - sometimes presenting an idea is a good contribution

“Intellectual Merit”

- Some organizations / communities like to use the term “intellectual merit”
 - What is the intellectual value or contribution of the work?
 - This is sort of a re-statement of the previous

Extent of Achieving Goals

- Another important thing to focus on in evaluating a paper is the extent to which they achieve the goals that they set out in their story
 - If they say they are solving X, to what extent do they solve X?
 - E.g., only under certain assumptions, in certain cases, completely
 - Almost no paper fully solves a problem (in fact, most authors are encouraged not to claim that they are solving a problem), so that shouldn't be the expectation

Realization of a Great Idea

- Given the extent to which they are doing what they claimed, how close are they to achieving the main important goal that they aim for?
 - This is subjective, but any feedback to the program committee or to the authors is usually appreciated

Content Supports Conclusions?

- Many of these other aspects have been focused on the higher-level story (problem, goals, approach)
- It's also important that the remaining content of the paper:
 - Supports the story
 - Clarifies assumptions, etc.
 - Provides supporting results
 - Demonstrates the claims being made
 - Discusses limitations and possible gaps

What about the details?

Details are Important

- Beyond just making a recommendation to accept or reject a paper, a secondary job of a reviewer is to provide useful feedback to the authors
 - What could they do to strengthen their story?
 - How could they better present results?
 - How to better tie results to story?
 - Etc.

What is Useful?

- Useful for the most part means constructive, but also gives the authors some feedback about how their story was perceived (versus how they may have intended it)

Reflecting the Story

- One of the key components of a review is a reflection of the paper's story back to the authors
 - If your reflection matches their intention, they probably did a good job telling the story
 - If not, maybe there are issues in their presentation, assumptions, or some details are missing
- The reviewer doesn't necessarily know how this is going to reflect
 - The reader doesn't know what the author meant, only what they said

Assessment of Contributions

- Finally, reviewers are usually asked to evaluate the paper overall, on its own or compared to others
- This assessment is not the final basis for acceptance or rejection of a paper, but it's a starting point for further discussion among the program committee
- Assessment shouldn't focus on details

Assessment vs. Details

- The assessment should focus on aspects of the paper that cannot be changed easily
- Detailed comments should focus on what the authors can improve in the short term
 - Between acceptance notification and publication version
- Details are still very important, but should not be used to reject a paper
 - There are always negative aspects of a paper that reviewers could use as “excuses” to reject it

Writing the Review Itself

Structure of the Review

- Review structures vary across communities, conferences, etc. but most follow similar recipes
 - Restate a summarized, perceived version of the story
 - Comment on the really good things - “find reasons to accept the paper”
 - Comment on the major weaknesses of the story and approach, not on the details
 - Provide details - a mix of positive and negative aspects of the presentation of ideas and results

Questions?