Publishing Your Research

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Quick show of hands…

1) Have you read a paper in your field?
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2) Have you given feedback on a colleague’s paper?
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Quick show of hands…

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3) Have you co-authored a paper submission?
4) Have you co-authored an accepted paper?
The Publishing Process:  
*The Why of Writing Papers*
The “Writing Bug”

It feels good:

• to share what you’ve done

• for others to be interested in your work

• to show how you’ve advanced state of the art!
Types of Publications

• Poster
• Position / vision paper
• Implementation paper
  • Source code
• Research paper
• Experiences paper
Where and What Depend on Why

- Research prestige
- Practitioner engagement
- Feedback
- Visibility
- Community engagement (so your work is used and benefits others)
Where and What Depend on Why

Examples from Computer Systems

• Research prestige:
  • Flagship conferences for your special interest group like: Symposium on Operating Systems Principles (SOSP), Operating Systems Design and Implementation (OSDI), Architectural Support for Programming Languages and Operating Systems (ASPLOS), SIGCOMM
  • More specialized topics: Network Systems Design and Implementation (NSDI), File and Storage Technologies (FAST), Dependable Systems and Networks (DSN)
  • Archival journals: ACM Transactions on Computer Systems, Transactions on Storage

• Practitioner engagement
  • USENIX Annual Technical Conference (ATC), SRE Con, OpenSHMEM and Related Technologies

• Feedback
  • Arxiv.org
  • Poster sessions at conferences and workshops
  • EuroSys Doctoral Workshop
  • Special topic workshops: Workshop on Resource Disaggregation and Serverless (WORDS), MLSys
  • Hot Topics Workshops: HotOS, HotStorage, HotDep

• Visibility (e.g., for interdisciplinary work that straddles communities)
  • Arxiv.org
  • Special topic workshops: Non-Volatile Memories Workshop
Where and What Depend on Why

Examples from Other Areas

• Research prestige:
  • Algorithms gold star: FOCS, STOC, SODA, ICALP
  • Even more competitive specialized conferences in hot areas: SIGGRAPH, NIPS
  • Flagship conferences in a more specialized area: SPAA, PODC, LICS, ALENEX, INFOCOM, MOBICOM; including new areas: International Conference on Neuromorphic Systems, quantum information systems

• Practitioner engagement
  • SIAM ACDA (part of its content), INFORMS (usually non-competitive), ALENEX (algorithm engineering)

• Feedback
  • Other non-competitive events: SIAM CSE, Civil Engineering conferences like EWRI
  • Satellite workshops with many conferences like IPDPS and Supercomputing

• Community engagement
  • Open source release
  • Open data sets: SNAP, Sparse Matrix sets
The Writing Process:  
*The How of Writing a Paper*
Know Your Audience

• Read lots of papers from the target venue
• Attend the venue (if a conference or workshop)
• Learn the conventions of the community – style, emphasis, “look” (e.g., theory papers have displayed definitions, theorems)
• Review for the venue if possible
  • Provide an expert opinion for papers your advisor is reviewing for a program committee and/or ask your advisor to recommend you as a reviewer
• Program Committees
  • Some conferences offer “shadow PCs” for senior students and young PhDs
  • Senior students may serve as volunteers if their advisor is the PC Chair
A Recipe

• Prepare the raw ingredients
  • Figure out your paper’s story
  • Do (another) literature search
  • Write an outline

• Repeat until fully baked:
  • Fill in more of your outline
  • Get feedback from non-author colleagues
  • Revise based on the feedback

• Communicate with co-authors
  • Agree on division of labor
  • Be explicit about authorship (who & in what order)
    • Different communities have different customs
  • Set internal deadlines (for outline, drafts of sections, full draft, feedback, etc.)
    • Note: non-academic co-authors may have additional deadlines for institutional review

Start early!
The Paper’s “Story”


• What is the advance over the state of the art?

• Why should the reader care? What do you want them to take away from the paper?

• The story should convey why this is an appropriate venue.

• Start by talking this out. It should sound like a story that can be told in just a few minutes.
Related Work

- Do another literature search before you write
  - You probably did a literature search before you started the research
  - Time has passed and your research has evolved
  - You may fear finding closely related research, but if you can find it, so can the reviewers
  - You need to know the state of the art NOW to tell the story of your contribution
Start from an Outline

• Iterate and agree on the outline with your co-authors before you start writing
  • Easier to revise an outline than carefully crafted prose

• You don’t need to fill in the sections in order
  • Sections I find easier to write first: Related Work, Methods, Results
  • Sections I often save until later: Introduction, Discussion
  • Writing the Abstract first can help frame the paper (and support the submission process)

• Nail down terminology (use macros if necessary)
• Create figures to be included
Revise, Revise, Revise

• The paper will (and should) evolve
• Writing a paper can help you see the work in a new light
  • Need to be explicit about underlying assumptions
  • Often, need to explain work to non-experts in this area
  • Need to flesh out details that “seemed” clear
• Feedback from peers may suggest a new way to frame the problem you’re solving or identify new contributions
  • Don’t forget to get comments from people who may be skeptical of your approach
• Feedback may lead to changes in the outline, the figures, even the authorship
Writing Resources

• Writing courses at your university
• Reference books (Strunk & White)
• Professional or pro bono proofreaders
• Tips on technical writing:
  • Hints for Technical Paper Writing, Armando Fox, 
    https://people.eecs.berkeley.edu/~fox/paper_writing.html#hints
  • How and How Not to Write a Good Systems Paper, by SOSP-9 chairs Roy Levin and Dave Redell, 
  • How to Get a Paper Accepted at OOPSLA, panel at OOPSLA 1993, 
ChatGPT

- ICML (International Conference on Machine Learning) allows ChatGPT-like tools “for editing or polishing author-written text”
  - Benefits both authors and reviewers
- They ban “text `produced entirely’ by AI.”
- Check the rules of the conference
- Safer to not use unless explicitly allowed
- If you use it to help with literature review, check its output. Look at the papers yourself.
Obeying Double-Blind Rules

• Many conferences use double-blind reviewing

• Do include references to your previous related work, but use 3rd person "Smith showed…")

• If you have used a special resource from your school, lab, industry, don’t call it by name. Just give the relevant capabilities for experiments.

• If you are giving code, scripts, etc., to reviewers, place at anonymous location (github, dropbox) and remove anything in the code or copyrights that identify you.
The Submission Process:

*Your paper’s journey*
When to submit?

• Better to push for a fixed deadline or wait until the work is “ready”?  
  • Can be stressful if you don’t feel your work is mature enough by the deadline  
  • Deadlines can be great forcing functions for focus and making progress

• Many systems conferences are shifting to a journal-like reviewing model  
  • Multiple submission deadlines per year  
  • Examples: VLDB, NSDI, ASPLOS, SIGMOD  
  • You can choose a deadline when your work is ready  
  • Accept-with-revisions outcome enables a round of revisions for work that might otherwise have been rejected
The Submission Process

• Abstract Pre-Registration

• Keywords = Reviewer Matching

• Conflicts on the PC: exact criteria vary, but include:
  • Your advisor, recent collaborators, folks from the same institution, personal relationships

• You may need to explicitly mark the paper ready to review

• Page limits and formatting rules are typically strictly enforced

• Suggestions:
  • Take advantage of reviewing site format checks on an early draft
Examples of Guidance to Program Committees

Supercomputing 2022 review form items:

Written feedback items:
- Contribution summary
- Strengths and weaknesses
- Detailed comments
- Issues to address in a revision

Scored items: relevance, technical soundness, originality, quality of presentation, overall rating, expertise
Examples of Guidance to Program Committees

IPDPS (International Parallel and Distributed Processing Symposium) attempts to improve reviews

Review form items:
Reasons to accept, Areas for improvement, Detailed feedback

Multiple choice:
Overall first-round merit, nature of suggested improvements (can they be addressed in a revision?), writing quality, reviewer expertise and confidence, self-declared quality of the review
Examples of Guidance to Program Committees

IPDPS (International Parallel and Distributed Processing Symposium) attempts to improve reviews

PC chairs guidance to reviewers:

• Goal is to improve the submitted papers
• Do not claim a paper is not novel/original without giving citations proving it
• Multiple incremental steps can lead to big progress over time
• With limited space, experimental papers cannot compare to everything and do all sensitivity analysis, etc. Be reasonable in expectations for experimental work. New areas may be inventing experimental evaluation methods.
• Do not penalize a novel idea for being simple or intuitive. Ensure that complex ideas are still accessible and explain why the approach works.
• If you reviewed the paper before (for a conference where it was rejected): if you were positive, ask to review it again; if you were negative and don’t believe it could be repaired, don’t
Examples of Guidance to Program Committees

Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2021

Written feedback items:

• Paper summary: What problem does it address? What are the paper’s key insights? What are the paper’s key scientific and technical contributions? What are its shortcomings or flaws?

• Comments for authors

• Questions for authors (in author response)

Scored items: paper formatting issues or double-blind reviewing violations, round 1 overall merit, round 2 overall merit, is this paper thought provoking?, is this paper convincing?, reviewer expertise, reviewer confidence
Examples of Guidance to Program Committees

Operating Systems Design and Implementation (OSDI) 2020

Written feedback items:
• Paper summary
• Strengths
• Significant weaknesses
• Comments for authors

Scored items: novelty, experimental methodology, writing quality, overall merit, reviewer expertise
Author Responses / Rebuttals

- **Primary goals:**
  - Correct any factual errors or misunderstandings in reviews
  - Answer reviewer questions on which their decision may hinge
  - Convince reviewers that you will incorporate their feedback

- **Pro tips:**
  - Sleep on it!
  - Prioritize reviewers’ comments (e.g., points raised by multiple reviewers) & group by themes
  - As with all writing, start early, get feedback, iterate
  - What if your scores are very low or high?
  - More at aka.ms/rebuttals
If Your Paper is Accepted

• Congratulations!
• You may need to work with a shepherd
• Copyright
  • Online web form usually
  • Must complete to get DOI and sometimes footnote content about rights to use
  • Non-academic co-authors are a complication
If Your Paper isn’t Accepted

• Yes, it will sting – give yourself time to process
  • Even established researchers have work rejected
• Reviewer comments are intended to help prepare the next version of your paper
• Rejection may be a good thing in the end
Things to Avoid

- Plagiarism (including self-plagiarism)
- Dual submissions
- Submitting without knowledge of advisor/co-authors
- Least Publishable Unit (LPU)
- Complaining about reviews on social media
- All-nighters (start early, iterate often!)
Summary

• Publishing gives you the chance to share the great work you’re doing
• Where to publish depends on your goals: feedback, community engagement, research prestige
• Many resources to help with writing and submission process
• Start early, ask for feedback and iterate
Questions?