Publishing Your Research

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Nancy Amato

- PhD @ UIUC; MS @ Berkeley; BS/AB @ Stanford
- Prof @ Texas A&M: 1995-2018
- Prof & Dept Head (back) @ UIUC: since 2019
- Research – Applied Algorithms
  - robotics, computational bio, parallel algorithms
  - 24 PhD Grads (11 profs, 9 research labs)
- Professional Activities
  - CRA-WP: DREU Co-Director, 2000-present
  - CRA-E, CRA Board (Vice Chair)
  - IEEE Robotics & Automation, NCWIT
- Other Stuff
  - Bernese Mountain Dogs – currently Fred & Wilma
  - Husband Lawrence Rauchwerger - also Stanford, UIUC, A&M, UIUC
  - Highlights: bucket trip to Machu Picchu & diving!
Ramón Cáceres

Born and raised in Dominican Republic

Education:
- B.Eng., McGill University
- M.S., U.C. Berkeley
- Ph.D., U.C. Berkeley

Career:
- Bell Labs + AT&T Labs – 12 years
- IBM Research – 5 years
- Various startups – 6 years
- Google – 5.5 years

Current Role:
- Software Engineer, Google in NYC

What I do for fun:
- Sailboat racing (recently competed in the Sydney Hobart Yacht Race)
- Travel
The Publishing Process
Publishing Your Research

• Part 1 – The publishing process
• Part 2 – The writing process

Thanks to Dilma Da Silva, Soha Hassoun, Ming Lin, and Lydia Tapia for much of the material in these slides, which they had in turn adapted from previous Grad Cohort and Grace Hopper presentations.
Goal of Publishing

• Benefits
  • Advance the state of the art
  • Public evidence of your abilities

• Quality vs. quantity
  • **Quality!** Quantity varies by area.
  • Citations matter as career progresses

• How to have impact
  • High-quality work
  • Highly visible outlets
Outlets for Publication

• Primary outlets
  • Conference papers
  • Journal papers

• Related outlets
  • Workshop abstracts and short papers
  • Doctoral consortium at conference/workshop
  • Posters at conference/workshop

• Other outlets
  • Books, software, patents, data repositories
  • Social media: blogs, Twitter, YouTube, ...
Evolutionary Publication Process

Peer-Reviewed

Workshop

Conference

Journal

Authors are NOT tied to this pipeline!
Workshop Process

Submission date usually after conference rejections
May have formal program committee
Usually high acceptance rate

Drawbacks:
- A lot of work (mini paper) for not a lot of prestige
- Acceptance is commitment to attend workshop
- Papers may or may not be archived!

Advantages:
- Early feedback on your work
Conferences

• Conferences are main focus in (most areas of) CS
  • Primary research outlet for CS (selective)
  • Place to meet for other disciplines (not selective)
  • But be sure to understand what outlet is primary in your area (especially if doing interdisciplinary research where journals may be primary)

• Not all conferences are equivalent
  • Know the top conferences in your research area
  • Acceptance rates and citation impact
  • Sponsoring organizations
Conference Process

• Fixed submission date
  • Typically around same time each year
  • May have separate abstract deadline

• Program committee
  • May be hierarchical and/or make multiple passes
  • May use non-committee reviewers

• Details vary by area and year
  • Read the Call for Papers carefully!
  • Consult senior researchers in your area
Journal Process

• No fixed deadlines
• Have more space and time
• No travel or registration expenses
• Can be hard to finish without a deadline
• Review cycle often much slower
Journal Review Outcomes

• Accept
  • Rare on first submission
• Minor revision
  • May mean “probably accept”
• Major revision
  • Important to make changes to address comments
• Reject
  • May specify “resubmit as new” or “hopeless”
What Reviewers Look For

- Clear contribution to the state of the art
- Convincing motivation
- Technical soundness
- Solid evidence

Rejection!
- What didn’t reviewers understand?
- How can I make it clearer?

Good writing will never make a paper. But, it helps to make contribution, technical soundness, and strong evidence clear!
Part 2 - The Writing Process
Before You Start Writing

• Think about what you want to accomplish
• Write a succinct problem statement
• Discuss your ideas with others
• Learn from previous papers
  • Claimed contributions
  • Motivation, methodology, results
  • Organization and flow
  • Writing style
Think about your audience

• Who are they?
  – Thesis committee, specialists, general readers?
  – May need to appeal to different audiences

• What do they know?
  – May not work in your general area
  – May not be familiar with your specific problem
  – May not be aware of your prior work
  – Need to give them sufficient context and background
  – Must demonstrate the importance of your work
Title and Abstract

• First impression of your paper
  — Used to decide whether to read or review it
  — Include terms useful for searching

• Should be a clear, complete summary
  — Include motivation and findings
  — Could substitute for reading the paper

• Avoid acronyms, citations, and formatting
Authorship

• Be explicit and generous

• Author ordering
  – By contribution or convention
  – Importance of position
  – Early clarity to avoid conflicts

• Authors’ responsibilities
  – Contributed to the work
  – Verified the work
  – Willing and able to present
Organization

• Introduction
  – Motivation, problem statement, and contributions
• State of the art
• Methods
  – Overview
  – Subsections on each key step/process
• Implementation, evaluation, and results
• Conclusions and future work
Introduction

• Motivation and high-level problem statement that non-experts can appreciate
• Quick overview of current needs and what state of the art does not address
• More detailed problem statement and proposed solution strategy
• List of key contributions
• Optional roadmap of the rest of the paper
State of the Art (a.k.a. Related Work)

Questions to consider
• Which related work should be included?
• At what level of detail should it be described?
• How do you respectfully discuss their limitations?

Rules of thumb
• Focus on most relevant work but be generous
• Give enough detail to make clear novelty of your work
• Compare and contrast to your work — don’t just summarize their work
• Stress building upon vs. tearing down
Methodology

• Overview of the work: Diagram? Chart?
• Precise description of your solution
• Key ingredients:
  – Problem Statement
  – Assumptions
  – Strategy and overall approach
• Acknowledge limitations
Evaluation – Experiment Design

Assessing the success of the approach
• Independent variables
  what is being varied/compared
  **COMPARISON**: your technique versus other techniques
• Dependent variables and measures
  what is measured
• **Effectiveness** – precision, accuracy, speedup
• **Trade-offs** - cost, overhead

Learn from great and weak examples
Results

• Clearly explain what you observed
• Pull content out of text when possible
• Avoid paragraphs of numbers
• *Tables and figures should stand alone*
  Do not assume reader is looking at them while reading the text
• Help the reader interpret the results
Conclusion

Summary of contributions to the state-of-the-art
• Intellectual /scientific merit
• Broader impact on the topic area, the field of computing, and society
• Be strong and positive
• Limitations & open issues
• Future Directions
References

- Not the place to save space
- Thorough survey
- Key references must be included
- Avoid having mostly self-citations
- Be generous & gracious
- Give appropriate credits
Submitting Your Paper

• Create a finished paper
  – Ensure proper layout
  – Copy-edit
• Anonymize appropriately (look at CFP)
• Submit on time
  – Usually can submit early and modify
• Read the CFP carefully
  – Ask the PC Chair if you have questions
Author Responsibilities

Do NOT plagiarize
  Obtain permission for use of material
  Cite and acknowledge work
  Be explicit about reuse of previous work
No dual submissions
Support the reviewing process
  Submit work you are proud of
  Respond to the reviews you receive
  Provide thoughtful reviews
Dealing with Reviews

Separate out the emotional response
  Write a rebuttal or make edits later

Understand the reviews
  Identify important issues
  Get to the root cause of complaints
  Issues you already address were unclear

Respond to the reviews
  Reviewers will see the paper again
Dealing with Rejection

Great papers sometimes often get rejected
   There is variation and error in process
   New or bridge topics particularly at risk

Keep trying
   Good target: Three submissions

Consider a venue change
   Match content to the best audience

Address reviewer comments

Papers can always be improved
Final steps: Publishing

Prepare the camera-ready version
   Goal is a strong paper, not just an accepted paper
   Address reviewer comments
   Work well with your shepherd
   (great recommendation letter opportunity!)

Share the paper with others
   Link to it, blog about it, Tweet about it
   Present the work
   Leave the details in the paper
Resources

Paper writing advice

• An Evaluation of the Ninth SOSP Submissions or How (and How Not) to Write a Good Systems Paper (Levin & Redell)
  http://john.regehr.org/reading_list/levin_sosp.html

• Writing Technical Articles (Columbia CS Department)
  http://www.cs.columbia.edu/~hgs/etc/writing-style.html

• The Elements of Style (Strunk & White)

ACM Policy

• Plagiarism: http://www.acm.org/publications/policies/plagiarism_policy
  Note in particular the definition of “self-plagiarism”

• ACM Author-izer service (with interesting FAQ):
  http://www.acm.org/publications/acm-author-izer-service
Questions?

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