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!
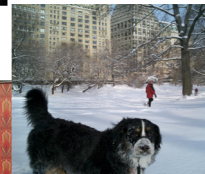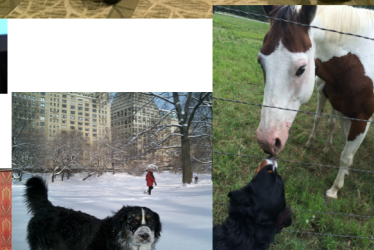
Ramón Cáceres

What I do for fun:

- Sailboat racing (recently competed in the Sydney Hobart Yacht Race)
- Travel

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
- Zanzibar global authorization system (bit.ly/zanzibar-paper)

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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

Authors are NOT tied to this pipeline!

Conference

Journal

beginning of an idea, some evaluation

more evaluation, well thought out

well evaluated, complete idea
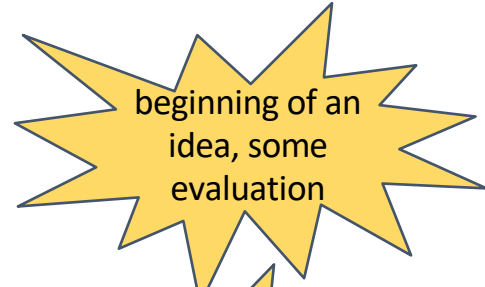
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Workshop Process

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

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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!

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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

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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

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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

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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

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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

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Questions ?

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