Publishing Your Research

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• Education
  • BS/MS Computer Science, UT San Antonio 1992/1994
  • Ph.D. Computer Sciences, UT Austin 2002

• Jobs
  • Instructor/Research UT Health Science Center San Antonio
  • Assistant/Associate Professor, Rutgers
  • Associate/Full/Department Chair, UT San Antonio
  • Professor, Texas A&M University
  • 3 sabbatical leaves at research institutions in Spain (UPC & BSC)
  • Consult with industry

• Research
  • Computer architecture: front-end microarchitecture, cache management
  • Invented perceptron branch predictor currently in your PC or phone
  • IEEE Fellow, Bob Rau award for branch prediction
  • Very diverse group of Ph.D. graduates

• Personal
  • Dual citizen USA/México
  • Born and raised in Texas
  • Married with one daughter
Armando Solar-Lezama

• I was born in Mexico City

• My whole family moved to Texas when I was 15

• BS in Computer Science and Math: Texas A&M University 2003

• PhD in Computer Science: UC Berkeley 2008

• @MIT ever since where I lead the Computer Aided Programming Group and I am Associate director of CSAIL.
Publishing your research

• Step 1: Do some great research ✓
• Step 2: Write it up into a great paper
• Step 3: Get it published in a top venue
Writing a great paper

• A great paper needs to convey three things:
  • That you have accomplished something that had never been accomplished before.
  • That there is a new idea behind your accomplishment, that this wasn't just another turn of the crank.
  • How it connects to the broader literature.
Structure

• Introduction
• Overview
• Method
• Evaluation
• Related work
• Discussion/Conclusion
Introduction

• The three elements of a good paper need to be crystal clear in the introduction.
  • New accomplished, based on new idea, connected to the literature

• The introduction is a contract.
  • If the introduction says "my method is the fastest" then you better have a really solid performance evaluation.
  • If it says "my method improves the usability" then you better have a user study that actually evaluates usability.
  • If you say “My method can find bugs in real software" but you only tested it on synthetic bugs injected into small code snippets, then it's not going to fly.
Overview

• Sometimes part of other sections

• Build intuition
  • Use a running example
  • Favor intuition over precision
  • Examples:
    • What does your algorithm do on a concrete example?
    • What is it like to use your new interface?
Method

• This is where you explain the details of what you did.

• Pitfalls:
  • This should not just be a code dump, or a text description of your algorithm. Break it into meaningful components, give them names.
  • Make sure you introduce every term before you use it.
  • Make sure the background is appropriate to the audience.
  • Make sure it's clear to the reader what's background and what you actually invented.
Evaluation

• Make it very clear what are the questions that the experiments are supposed to answer.

• It should be crystal clear that you went out of your way to try to disprove your hypothesis.
Evaluation

• SIGPLAN evaluation checklist

https://www.sigplan.org/Resources/EmpiricalEvaluation/
Related work

• Sometimes it goes at the end, sometimes it goes in the beginning.

• 3 categories of related work:
  • What you build upon,
  • what you compete with,
  • unrelated work
Discussion/Conclusion

• Your opportunity to discuss the implications of your work
General writing advice
Building Publishing Muscle

• Non-Archival Publications
  • Workshop papers
  • Poster Abstracts
  • Doctoral Symposia

• Archival Publications
  • Full-length Conference and Journal Papers
Know Your Audience

• Read lots of papers from the target venue
• Attend the venue (if a conference)
• Review for the venue if possible (ask your advisor to recommend you for this)
• Program Committee meetings
  • Senior students may get invited if their advisor pulls strings
  • You may be able to observe as a student volunteer
Make an Outline

- Iterate and agree on the outline with your advisor before you start writing
- You don’t need to fill in the sections in order!
  - Sections I often find easier to write first: Related Work, Methods, Results
  - Sections I often save until later: Introduction, Discussion
Start Early

• The more iterations, the stronger the paper
• Set an internal deadline with your advisor
• When is a draft “advisor ready”? Perfection isn’t expected
• Leave ample time for advisor and peer feedback, making submissions accessible, creation of video or other supplementary materials
Leverage Resources

• writing courses at your university
• reference books (Strunk & White)
• professional or pro bono proofreaders
  • Can you or your advisor apply for funding for this type of resource?
  • Free resources often include paper mentoring programs offered by conferences & professional societies
Getting it Published
Communicate with Co-Authors

• Agree on deadlines (for outline, drafts of sections, full draft, feedback, etc.)
• Agree on division of labor
• Be explicit about authorship (who & in what order)
Pick a venue

• Go for the best venue that works for your paper
  • but make sure it’s a good match
About Deadlines

• What to do if the submission site crashes near the deadline...

• When is it OK to request an extension?
Metadata Matters

• Abstract Pre-Registration
• Keywords = Reviewer Matching
• What name should you publish under?
Rebuttals

• Sleep on it!
• What if your scores are very low or high?
• Prioritize reviewers’ comments & group by themes
• As with all writing, start early, get feedback, iterate
• More at aka.ms/rebuttals
Things to Avoid

• Plagiarism (including self-plagiarism)
• Dual submissions
• All-nighters (start early, iterate often!)
• Complaining about reviews on social media
• Submitting without knowledge of advisor/co-authors
A few parting tips & reminders

• Publications stay on your CV forever
  • Submit work you are proud of to venues you respect

• Be explicit and generous when determining authorship – and do it early on, it will only get more awkward with time

• Many things vary depending on area
  • authorship order (by contribution, convention, position)
  • #papers, conferences vs. journal, acceptance rates

• Reviews – learn from them and improve your work
  • When writing reviews yourself, imagine the authors reading them
Acknowledgments

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Questions?