

Ivo Ihrke



Scientific Writing or How to write a research paper ?



Agenda

- Why do we write papers ?
- The publishing and reviewing process
- The anatomy of a paper
- Stylistic questions
- Apply reviewing criteria to your product

How Does it Work ?

- This course: you prepare notes
- After the course: you formulate the paper
(template will be made available on the course homepage)
- I will act as a reviewer and provide feedback

Structure of the Course

Monday

The publishing
process

Lunch

The publishing
process

Tuesday

Anatomy of a
Research Paper

Lunch

Anatomy of a
Research Paper

Wednesday

Questions of
Style/
Tools

Lunch

Presentation
Advice on Talks

Group work – How ?

- Approx. 4-5 members each, re-arrange tables
- Can base on affinity / closeness in subject
 - Pros:
 - Easier to communicate with others
 - More technical feedback
 - Cons:
 - Less practice communicating results to a general audience

Introduction

- Please introduce yourself

- Name Ivo Ihrke
- Subject Area Computer Graphics /
Computer Vision / Optics
- Status 27th semester student ;)
- Short Project Summary Teach How to Publish a
Research Paper

Group work – How ?

- Two types of group work
 - Group discussion + presentation of results by spokes person
 - Purpose:
 - Channeled collection of thoughts and ideas
 - Individual Thinking and Discussion with a Partner
 - Purpose:
 - Creating Concepts / Taking notes for individual aspects of your paper
 - Discuss and get feedback for your ideas

Organization

- Need one spokesperson per table
 - Task:
 - Take notes
 - Summarize table discussion for all to share
 - Encouraged: Take turns with this job
- I will keep notes of the summarized ideas
 - Purpose:
 - For my and your record
 - “take home points”

Group Work

- First Try (group discussion, 5 min):
 - Why are you taking this course ?
 - Why do you want to be able to write a research paper ?
 - What are your expectations ?

Poll

- How many research papers have you read ?
- For what purpose ?

Introduction – Poll

- What is a research paper ?
- Why are research papers being written ?
- What are they good for ?

Dictionary Definition

- 1) ***a*** : a felted sheet of usually vegetable fibers laid down on a fine screen from a water suspension ***b*** : a piece of paper
- 2) ***a*** : a piece of paper containing a written or printed statement : document <pedigree *papers*> ***b*** : a piece of paper containing writing or print ***c*** : a formal written composition often designed for publication and often intended to be read aloud <presented a scholarly *paper* at the meeting> ***d*** : a piece of written schoolwork
- 3) a paper container or wrapper
- 4) newspaper
- 5) the negotiable notes or instruments of commerce
- 6) wallpaper
- 7) tickets; *especially* : free passes
- 8) paperback

Primary Purpose

- Communication of Scientific Results
 - Original Research
 - Review Articles
 - *Peer-Reviewed*

Secondary Purpose

- (one of the few) *measurable outputs* of the scientist
 - *Others:*
 - Patents
 - Supervised Students
 - Teaching
 - Prizes
 - Volunteering (Peer-Review, Organization)

Secondary Purpose

- Therefore important :
 - Indicator of success for outsiders
- This implies money (on all levels)
 - Job as a PhD student
 - Job as a PostDoc
 - Job as Junior Faculty
 - Tenured Job
- Research Grants

Secondary Purpose

- Important: Quality and Quantity of Publications
- Quality implies *good papers*

Poll

- What is a good paper ?
- What makes a paper a good one ?
- Who decides if a paper is good ?
- How to judge whether a paper is good ?

What is a good paper ?

- Who decides ?
 - You ;)
 - Three Stages of Evaluation
 - Your Supervisor
 - > paper submission
 - Reviewers
 - > paper acceptance
 - Audience (after publication)
 - > citations

What is your Supervisor looking for ?

- Initiative on your part
- Mostly happy with any publishing suggestion you may have (unless different plans)
- Take charge – seek feedback
 - Find suitable conference / journal
 - Prepare paper draft
 - Manage submission and response

What are Reviewers looking for ?

- (show reviewer forms)
 - Main criteria:
 - Topic / Relevance
 - Technical Novelty
 - Technical Soundness
 - Claims & Contributions
 - Claims backed up by results ?
 - Layout and Preparation of Materials
- Must haves**

Different Standards

- “publishability” is not binary
- a gradual process
- The hierarchy of conferences / journals
 - Top tier
 - Second tier
 - Third tier
 - Do not submit - conferences

Different Standards

- Hierarchy influences reviewing standard
 - For less prestigious conferences / journals
 - Mostly compromises on
 - Technical novelty
 - Topical fit
 - are made on lower levels
- Conferences have to fill their program
 - Indicators: acceptance rates (not always indicative)

Some resources

- <http://ppadala.net/conferences/> (visual statistics, CS conf.)
- <http://www.cvpapers.com/> (computer vision papers + pdfs)
- <http://kesen.realtimerendering.com/> (list of computer graphics conf. + acceptance rates)
- <http://www.cs.ucsb.edu/~almeroth/conf/stats/> (networking conf. statistics)
- <http://webdocs.cs.ualberta.ca/~zaiane/htmldocs/ConfRanking.html> (CS attempt to group conferences)

What is your Audience looking for ?

- New ideas / Inspiration
- Tools to solve their (sub-)problems

How to Publish a Paper ?

-

The publishing process

The Publishing Process

- (Paper preparation)
- Paper submission
- Review
- Notification
- Copyright Transfer

The Publishing Process

- (journal) copy editing
- (journal) Proofs
- (journal) Online publication
- (journal) Print publication
- (conference) talk / poster presentation

Paper Submission

How to choose a conference / journal

- Where are articles that you read published ?
- Call for papers (CFPs) (large list at <http://www.wikicfp.com>)
- The hierarchy of conferences / journals
 - Top tier
 - Second tier
 - Third tier
 - “Do not submit” - conferences

Submission - What else to consider ?

- Conferences – deadline
 - Conference calendars
(try google “conference calendar <your subject>”)
- Magnitude of your contribution
- Topical fit (CFP)

Submission

- Submission:
 - Formatting guidelines
 - Meet deadlines
 - Often strict for top and second tier
 - Sometimes deadline extensions for third tier
 - usually anonymous submission
 - Double submission rules
 - Letters (journal)
 - Letter to editor

Submission

- (conference) Supplemental material
 - E.g. previously published article if doubt might arise that the content is too close to current submission
 - Extra derivations, results that do not fit into paper
- Online submission considerations
 - Be careful about the deadline (server overload)
 - Sometimes only checksums are allowed (MD5)

The Review Process

The Review Process

- Slight differences journal / conference
- Top conferences and journals have equal impact and prestige in CS
 - some conferences are even considered better than journals or merge with journals
- Journals typically take (much) longer to publish

The Review Process - Conferences

- How is a conference organized ?
 - Organizing committee
 - Program Chair
 - Assembles program committee (PC)
 - Organizes advertisement
 - call for papers (CFP)
 - Webpage
 - Submission system
 - Funding
 - Manages submission process, assigns papers to PC members

The Review Process - Conferences

- PC reviews papers (or asks experts on paper topic to do the review)
- Every paper is reviewed by 3-5 referees
 - Assign scores and give recommendation

The Actual Review

- Most precious resource – reviewer time
 - Currently I review about 50 papers per year
 - 8-12 pages each -> ca. 500 pages of extra reading + thinking about & commenting on
 - This is on top of teaching, organizing money, and doing my own research
- PCs and Editors do not want to overburden reviewers

The Actual Review

- How does it work ?
 - 1. quick scan
 - Sloppy preparation ?
 - Formatting requirements
 - Reference style / completeness
 - Spelling / use of language
 - Idea, Claims and Quality of the results
 - Abstract, scan intro, conclusions, results sections
 - Initial opinion or attitude towards paper
 - Influences perception of later content

The Actual Review

- How does it work ?
 - 2. careful full read
 - Topic / relevance
 - Technical Soundness
 - Technical Novelty
 - Claims & contributions
 - Claims justified ?
 - Comparison with competing methods / Evaluation
 - Missing References
 - Limitations / Discussion

The Actual Review

- How does it work ?
 - 3. (if necessary) full fledged analysis
 - Repeat all derivations
 - Check validity of assumptions
 - Perform small experiments (e.g. Matlab)
 - Try re-implementation
 - I will only do 3. if I think the method would be valuable if it worked, but I am unsure that it does
 - Try to avoid unfair rejection (very costly, timewise)

The Review Process - Conferences

- (optional) rebuttal
 - Authors try to change reviewer opinion
 - Factual errors
 - More often: try to convince about novelty
 - reviewers might change score and/or recommendation)
- Chair sorts all submissions by average score
- PC discusses papers:
 - goal – everybody agrees on recommendation
 - Order from top to bottom of list
 - Good: discussion (you need a champion)
 - Bad: no discussion, nobody likes or dislikes your paper

The Review Process - Conferences

- Author notification
 - on acceptance you can publicize this fact (e.g. webpage)
- Timeline submission → author notification
 - About 3 months
- Usual Rules:
 - (double) anonymous
 - No double submissions
 - No previously published results

The Review Process -Journals

- Submit to Editor-in-Chief
 - Either finds reviewers, or
 - Hands over to Topical Editor
 - which then finds reviewers
 - Typical number: 3
- Reviewers perform reviews
 - propose acceptance, modification, or rejection
 - Editor decides

The Review Process -Journals

- Accept – great
- Minor revision – also good
 - Will have to incorporate changes required in reviews
 - Editor will check if satisfactory
- Major revision – this will take time
 - Incorporate required changes
 - Resubmit with letter
 - Reviewers perform second review

The Review Process -Journals

- Usually number of cycles restricted to two
 - If still major revision -> reject
- Reject is of course bad
 - Seriously rethink the project

The Review Process - Journals

- Timeline submission → author notification
 - About 6-9 months in my experience
 - Add time to perform required changes
 - Overall until publishing: 2+ years
- Usual Rules:
 - (double) anonymous
 - No double submissions
 - Can contain previously published material
(my area : need ~30-50% new content over conference paper)

Copyright Transfer

Copyright Transfer

- Publisher wants to own your work
- Usually restrictive contracts
 - Examples
- Affects
 - Your right to publish private copies (homepage)
 - Your right to reuse materials
 - Your right to put your article into an institutional repository

Copyright Transfer

- Is a legal contract
- You ensure that you have rights to all materials in the article
 - Including images / visual materials
 - This includes own images from previous articles (copyright transfer) !
 - Text passages
 - Be careful about third party materials -> usually need written permission to use

The Journal Pipeline

The journal pipeline

- Upon acceptance
- Transfer to copy editor
 - spell-check
 - Formatting guidelines
 - In-house reference style (you need to provide info)
 - Results in
- Proof (example)
 - To be accepted or corrected by you

The journal pipeline

- Bouncing proof back and forth until happy
 - Be prompt in reply (2-3 days)
- Ready for online publishing
- Print appears (much) later
 - Can be another half a year
 - You get a physical copy of the journal where your article appears