Readings Covered


Overview

- Writing InfoVis Papers: Pitfalls to Avoid
- Non-Paper Research Process and Pitfalls
- Reproducable Research
- Vandewalle paper
- Course-Specific Issues

Late Pitfalls: Results

- Unfettered By Time
- choose level of detail for performance numbers
- detailed graphs for comparison
- against state-of-the-art dataset sizes for 
technique
- small datasets may be acceptable for user studies

Late Pitfalls: Tactics

- Stealth Contributions
- it’s your job to tell reader explicitly
- consider carefully, often different from original goals

Paper Writing: Contributions

- what are your research contributions?
- what can we do that wasn’t possible before?
- how can we do something better than before?
- what do we know that was unknown or unfixed before?
- determines everything
- from high-level message to which details
- often not obvious
- diverged from original goals, in retrospect
- state them explicitly and clearly in introduction
- don’t hope that reviewer or reader will fill in for you
- don’t leave unsaid what should be obvious after close reading of previous work
- pre-very important - but many readers skip
- goal is clarity, not overloading
- do include limitations: often later, in discussion subsection

Later Pitfalls: Tactics

- Stealth Contributions
- it’s your job to tell reader explicitly
- consider carefully, often different from original goals
- I Am So Unique
- don’t ignore previous work
- both on similar problems and with similar solutions
- Enumeration Without Justification
- “X did Y” not enough
- must say why previous work doesn’t solve your problem!
- Sweeping Assumptions
- cite source or delete assertion or flag as contrib
- check what “everybody knows”
- I Am Utterly Perfect
- discussion of limitations makes paper stronger

Later Pitfalls: Submission

- Slimy Simultaneous Submission
- often detected when same reviewer for both
- instant dual rejection, multi-conference blacklist
- Resubmit Unchanged
- often will get same reviewer, who will be irritated

Late Pitfalls: Style

- Deadly Detail Dump
- how allowed only after what and why

Final Pitfalls: Style 2

- Jargon Attack
- avoid where you can, define before using

Final Pitfalls: Results 2

- But My Friends Liked It
- asking labmates not convincing when targets different

Unjustified Tasks

- user study tasks should be ecologically valid
- convincing abstraction of real-world tasks of target users

Middle Stage: Visual Encoding

Unjustified Visual Encoding

- should justify why visual encoding design choices are appropriate for problem
- requires clear statement of problem and encoding, of course
- Hammer In Search Of Nail
- characterize capabilities of new technique before submitting paper
- even if start from technique-driven place
- 2D Good, 3D Better
- must justify when benefits 3D outweigh cost of occlusion
- abstract visual encoding allows choice over mapping variables to spatial position

Middle Stage: Visual Encoding 2

Color Cacophony

- blatant disregard for basic color perception facts
- huge areas of highly saturated color
- color coding intended for regions too small for distinguishability
- nominal color coding for too many (15+) categories
- red/green with no luminance difference
- encode 3 separate variables with RGB

Rainbows Just Like In The Sky

- unjustified use of continuous rainbow colormap
- hue does not have implicit perceptual ordering
- standard rainbow colormap is perceptually nonlinear
- for many nameable regions, quantize into segmented colormap

Lecture 15: Research Process and Paper Writing

Information Visualization

CPSC 533C, Fall 2011

Tamara Munzner

UBC Computer Science

Mon, 7 November 2011
Individual Meetings
- I encourage you to meet with me before final presentation
- optional, not mandatory
- particularly good times
- partway done, several weeks after updates
- mostly done, week or so before due
- schedule ahead by email (best), or use office hours

Research Process and Pitfalls
- Review Reading
- Review Writing
- Conference Talks

Review Reading Pitfalls
- Reviewers Were Idiots
  - rare: insufficient background to judge worth
  - if reviewer didn’t get point, many readers won’t
  - rewrite so clearly that nobody can misunderstand
- Reviewers Were Threatened By My Brilliance
  - seldom: unduly harsh since intimately familiar area
- I Just Know Person X Wrote This Review
  - sometimes true, sometimes false
  - don’t get fixated, try not to take it personally
- It’s The Writing Not The Work
  - sometimes true: bad writing can doom good work
  - conversely: good writing may save borderline work
  - sometimes false: weak work all too common
  - many people reinvent wheel
  - some people make worse than previous ones

Research Process Suggestions
- process talk feedback session: at least 3x talk length
  - global comments, then slide by slide detailed discussion
  - nurture culture of internal critique
- have nonauthors read paper before submitting
  - internal review can catch many problems
  - ideally group feedback sessions above

Researcher Writing Pitfalls
- Uncalibrated Dismay
  - remember you’ve mostly read the best of the best!
  - most new reviewers are overly harsh
- It’s Been Done, Full Stop
  - you must say who did it in which paper
  - providing full citation is best
- You Didn’t Cite Me
  - stop and think whether it’s appropriate
  - be calm, not petulant
- You Didn’t Channel Me
  - don’t compare against the paper you would have written
  - review the paper they submitted

Course-Specific Issues
- Paper Structure: General
  - Low level: necessary but not sufficient
    - correct grammar/spelling
    - sentence flow
  - medium level: order of explorations
    - build up ideas
  - high through low level:
    - why, what before, how
    - paper level
      - motivation: why should I care
      - overview: what did you do
      - details: how did you do it (algorithms)
    - section level
      - sometimes even subsection or paragraph

Why Bother With Reproducibility?
- moral high ground:
  - for Science
- enlightened self-interest:
  - make your own life easier
  - you’ll be cited more often

Levels To Consider
- paper
  - post it online
  - makes sure it stays accessible
- algorithm
  - documented in paper itself
  - document further with supplemental materials
- code
  - make available as open source
- data
  - make available
  - make tricky issue: data might not be yours to release!
- parameters
  - how exactly to regenerate/produce figures, tables

Final Presentations
- context
  - department will be invited
  - refreshments will be served
  - order: alphabetical by first name
- 15 min: 12 minutes talk, 3 minutes questions
  - some context setting, but focus on results
  - ok to assume audience already saw update
- demos encouraged
  - do include screenshots in slides as backup
  - practice timing in advance to do quickly
  - if you’re using your laptop, must do checkout in advance

Final Project Write ups
- no length restrictions
- use images liberally
- conference paper format
  - use templates provided (LaTeX, Word)
  - submit PDF
- due two days after presentations (Wed 12/14 noon)
- standalone document
  - ok to reuse some text from proposal (only if appropriate)
  - please do read Project Description page closely!

Final Project Writeup Structure
- Introduction - description of problem: task, data
- Related work
- Description of solution: infovis techniques, visual encoding
- Medium-level implementation
  - must include specifics of what other components or libraries you built upon, vs. what you did yourself
- Results
- Screenshots of your software in action
- Scenarios of use
- Discussion and Future Work
  - strengths and weaknesses
  - lessons learned
  - what would you do if you had more time?
- Bibliography
### Course Requirements vs. Standard: 1
- Research novelty not required
- Some past projects implement published technique
- Some past projects explicitly not aiming for academic publishability
- Many past projects propose solution using existing techniques (design study)
- Some past projects extend/refine algorithms (technique)
- Some past projects have become posters at InfoVis
- Some past projects could have been submitted as papers with further work

### Course Requirements vs. Standard: 2
- Explicit explanation of what was coded is required for programming projects
- Submission of code is also required
- You're encouraged but not required to make project available open-source!
- Part of my judgement is about how much work you did
  - High level: what toolkits etc did you use
  - Medium level: what pre-existing features did you use
  - Medium level: how did you adapt/extend existing features to solve your specific problems
- Design justification is required (unless analysis/survey project)
- Technique explanation alone is not enough

### Course Requirements vs. Standard: 3
- User studies not required - time frame too short
- Confirm that your color choices appropriate
- Vischeck.com for colorblind
- Legibility, color guidelines

### Writing Correctness and Style
- [http://www.cs.ubc.ca/~tmm/writing.txt](http://www.cs.ubc.ca/~tmm/writing.txt)

### Code
- Pack up with tar/gzip/zip
- Must have top-level README with roadmap for files
  - Which parts are your code, which are libraries, etc
  - How to compile
  - How to run
- Acceptable that it doesn't compile on my machine if you targeted another platform