



# How to Write Effectively

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R Greiner  
Cmput603

... including material from J Nelson Amaral, R Holte and others...



*Making  
IT  
happen*

**Computing Science**



# Outline

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- Context
  - Graduate Career
  - Results
    - Experimental Methodology
  - Strategy; Design; Tactics
  - Authorship
- General Guidelines: Content
- General Guidelines: Form
- Details
- References



# Writing and Submitting Papers

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- MSc:
  - ≥ 1 “good” conference paper
- PhD:
  - 2-ish good conference papers + a journal paper
- Writing papers is great practice for thesis itself...
  - ...and you can reuse the material!
- Where to submit?
  - Check out people doing research related to yours; publish see where they publish
  - Publish at the conferences that have the most interesting papers



# Step 0: Get an Idea, and Result!



- Need *Result*
  - Result  $\neq$  Idea
  - Result establishes *Thesis*
    - Thesis  $\neq$  Dissertation
- What would YOU like to read??

## Types of Results

- Theoretical: Task Z is NP-hard
  - Proof
- Experimental: AlgX solves TaskY
  - Empirical studies
- Build: Can produce AlgW with PropertyZ
  - Implementation (and demonstration)
- Process: People have ResponseQ; ProjectManagementR reduces errors
  - Empirical studies
- Model: ModelT is accurate
  - Comparing simulations against reality

# Role of Statistics: Need more than Mean



- Two coins... which has a higher prob of heads?
    - Better be right: you will lose your house if you are wrong!
  - You flip each coin once: **CoinA** lands  **CoinB** lands 
    - Are you SURE that **CoinA** has a higher probability of heads?
    - Are you really ready to risk your house over this?
  - You then flip each coin 99 more times, and observe
    - **CoinA**: 48 H, 52 T
    - **CoinB**: 54 H, 46 T
- Which coin would you pick now?
- Now **CoinB** looks better -- but, would you risk your house here?
- 
- Continue flipping, for a total of 10,000 flips...
    - **CoinA**: 4800 H, 5200 T
    - **CoinB**: 5400 H, 4600 T
  - Now what?
    - "expected probability" for **CoinA**, 48%, has not changed; nor has the "expected probability" for **CoinB**, 54%.
    - But now would your risk your house?





# Experiments serve a purpose

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- Experiment provide evidence for claims
  - design them accordingly!
- Choose appropriate test datasets
  - consider using artificial data
- Record measurements directly related to your claims



# Establish the need for your alg

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- Try simple approaches before complex ones
- Try off-the-shelf approaches before inventing new ones
- Try a wide range of alternatives
  - not just ones most similar to yours
- Make sure comparisons are fair



# Explore Limitations

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- Under what conditions does your system...
  - ... work poorly ?
  - ... work well ?
- What are the sources of variance ?
  - Eliminate as many as possible
  - Explain the rest





# Explore anomalies

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## **Superlinear speedup**

IDA\* on  $N$  processors is more than  $N$  times faster than on 1 processor

*“... we were surprised to obtain superlinear speedups on average... our first reaction was to assume that our sample size was too small*

*... ”* - V. Rao & V. Kumar

Superlinear Speedup in Parallel State-Space Search  
Technical Report AI88-80, 1988  
CS Dept., U of Texas - Austin



# Look at your data!

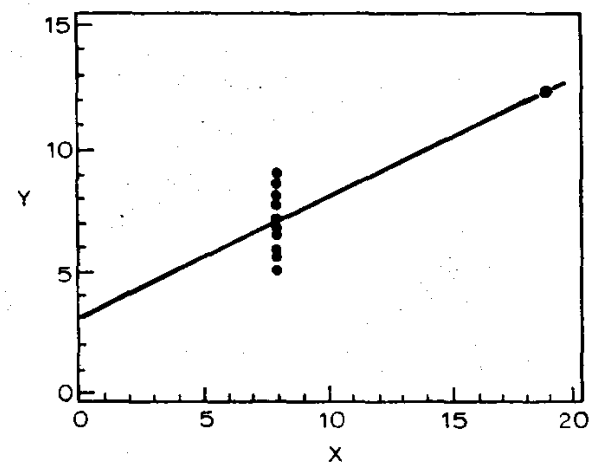
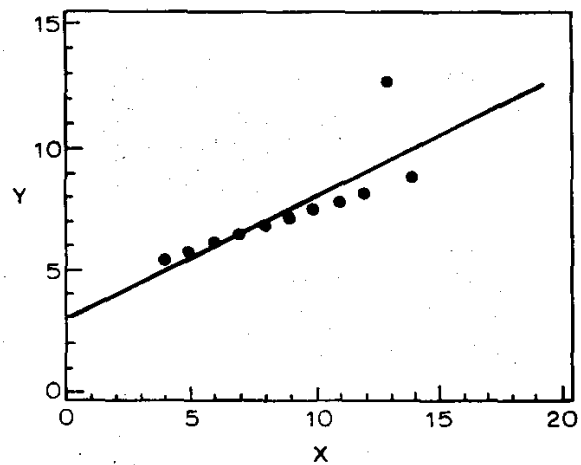
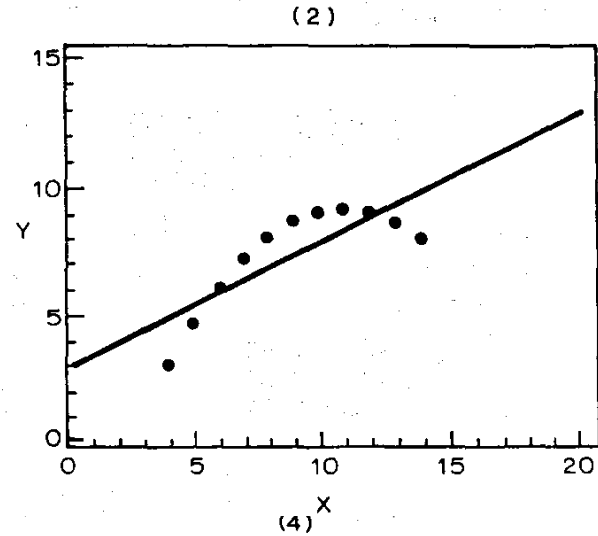
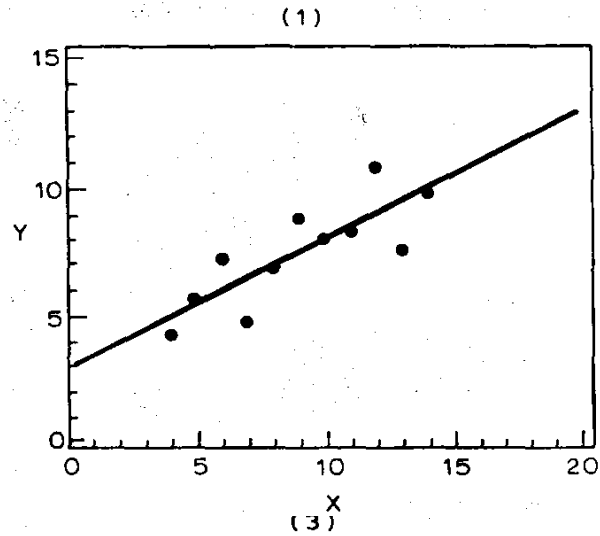
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4 x-y datasets, all with the same statistics.

- Are they similar ? Are they linear ?
  - mean of the x values = 9.0
  - mean of the y values = 7.5
  - equation of the least-squared regression line is:  $y = 3 + 0.5x$
  - sums of squared errors (about the mean) = 110.0
  - regression sums of squared errors = 27.5
  - residual sums of squared errors (about the regression line) = 13.75
  - correlation coefficient = 0.82
  - coefficient of determination = 0.67

F.J. Anscombe (1973), "Graphs in Statistical Analysis," *American Statistician*, 27, 17-21

# Anscombe Datasets Plotted





# Obviously ...

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- Debug and test your code thoroughly
- Keep track of parameter settings, versions of program and dataset, etc.
- Too obvious to mention ?
  - No!



# Outline

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  - Strategy; Design; Tactics
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- General Guidelines: Form
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# Writing papers: Strategy

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1. Decide where to submit the paper
    - Might not finish in time, but having a deadline is helpful
    - 2 – 4 months is a good planning horizon
  2. Decide what you will say
    - What are the key **ideas**? ... developed yet?
    - What are the key **results**? Have you designed and run the experiments yet? Have you analyzed the data?
    - What is the key **related work**?
      - Have you read the relevant background material?
      - Can you give a good summary of it?
- Now start to fill in the missing holes!  
... you can write in parallel with research...



# Writing papers: Design

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- **Abstract** – summarizes the *research contributions*, not the paper
  - Abstract ≠ outline of the paper
- **Introduction/motivation**
  - *what you've done* and *why the reader should care*
  - + outline of the paper
- **Technical sections**
  - ≥ 1 sections summarizing the *research ideas* you've developed
- **Experiments/results/analysis**
  - ≥ 1 sections presenting *experimental results* and/or supporting proofs
- **Future work** – summary of where you're headed next and unanswered questions
- **Conclusions** – reminder of *what you've done* and *why it's important*
- **Related work** – ? after introduction, or before conclusions ?
  - are you building on previous research, or dismissing it as irrelevant ... 😊

End with *what-you-did* ; not *what-you-didn't-do* !!



# Writing papers: Tactics

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- Top-down design (outline) is very helpful
- Start with bulleted lists... before writing process
  - helps you past writer's block
- Neatness counts!
  - Check spelling, grammar, consistency of fonts and notation *before* showing it to anyone for review
  - If they're concentrating on your typos, they'll miss what's interesting about the content
- Leave time for reviews!
  - Fellow students, collaborators, advisors, ...
  - A paper is only done when it's submitted...  
... if then ...





# Authorship

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- Who should be an author?
  - Anyone who contributed significantly to the conceptual development or writing of the paper
  - Not *necessarily* people who provided feedback, implemented code, or ran experiments
- Order of authors?
  - First: any author(s) who contributed most of the conceptual development and/or did most/all of the writing
  - If the contribution was equal or authors worked as a team: list authors alphabetically
    - ? explicitly state “The authors are listed in alphabetical order”



# Outline

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- Context
- General Guidelines: Content
  - Telling a Story
  - Use Example(s)
  - Write for specific Reader
  - Make precise claims
  - Motivate results
  - Relation to other work
  - Understand material!
- General Guidelines: Form
- Details
- References



# Paper $\equiv$ a Story establishing thesis!

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- Writing  $\equiv$  telling a story
  - ... structured, flowing
  - not shopping list ... not a core dump ...
- Every statement should tie into thesis
  - *Beginning:* define/state thesis
  - *Middle:* support thesis
    - experiments, algorithm, data; theory, ...
  - *End:* summarize, discuss thesis



# Make Connections

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- Can't just claim: "A is true"
  - Need to provide EVIDENCE supporting it
  - ... or [ref] if sufficient ...
- Can't claim "B implies A", without showing link
  - Eg, "AlgX is effective because Bayesian nets are factored"
  - Perhaps B is true and A is true.  
Why does B lead to A?



## Use Simple Examples...

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Essential!

- ~~Useful~~ to have an example to illustrate ideas
- Better to have a *SIMPLE* example
- Best to use the *same example* throughout
  
- If possible, include picture

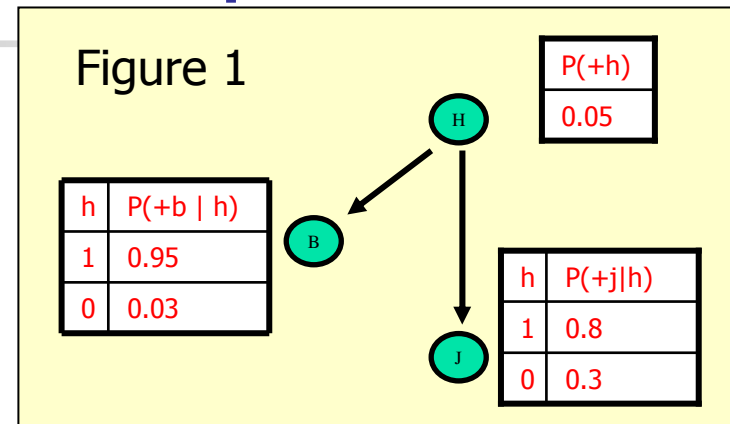
# Example of Using Example

A *Bayesian net* is a annotated directed cyclic graph (DAG) whose nodes represent variables and arcs correspond to "statistical dependencies", with "CPTables" that ; see Figure 1.

...

**Inference:** In general, we need to compute conditional probability. Eg, in Figure 1,  $P(+h, +b, -j) = P(+h) P(+b | +h) P(-j | +b, +h) = P(+h) P(+b | +h) P(-j | +h)$ , which is factored ...

**Learning:** Now consider learning the Bayesian net in Figure 1, from a data sample ...



# Numbers

- If numbers (in example) are arbitrary, use *unique values*.
- Using  $r_{3,2}$  means:
  - 3 ~ Movie
  - 2 ~ Usereven if you don't say it!
- Not if you use  $r_{2,2}$  ...

	M1	M2	M3	...	Mn
U1					
U2		$r_{2,2}$	$r_{3,2}$		
...					
Um					



# Think of some Specific Reader

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- What does **Specific Reader X** know?
  - Don't say too little
    - think of what **X** needs to know to understand the material... and include this!
  - Don't say too much
    - skim over (?avoid?) material that **X** already knows
- Don't say something that:
  - If reader already knows, won't help
  - If reader does NOT know, won't help





# How Much to State??

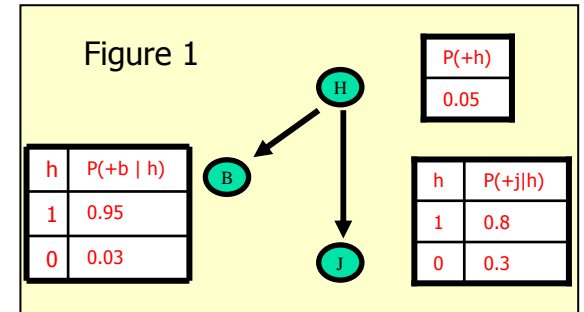
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*Basically, MCMC constructs a Markov chain that is long enough for the distribution of the elements to stabilize to a common, stationary distribution.*

- If reader knows MCMC, s/he already knows this.
- If s/he does NOT know MCMC, this won't help.
  
- So... either say A LOT MORE, or nothing.
  - Or give ESSENTIAL issues, and [ref]

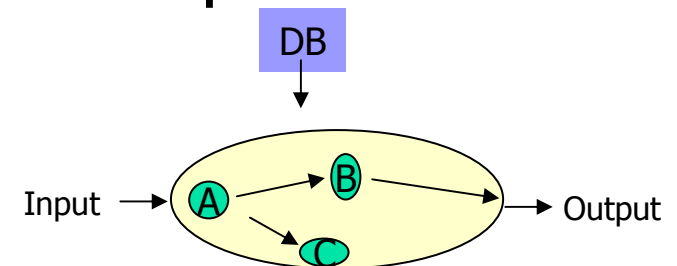
# Don't make your reader guess!

- Be clear!
- Define each term used
  - ... before you use it
  - Illustrate in example!
- Include everything necessary
- Only ONLY what is necessary
  - Superset of good paper is NOT a better paper!
- Avoid ambiguities



# Make Precise Claims

- achieved improved predictive performance  
? improved over what??
- ... we need to do X ...
  - ? need? You might CHOOSE to...
- If process:
  - Give Input / Output
  - Show how Input is related to Output
  - Give pseudo-code
  - Use diagrams/figures!!





# Motivate Results

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- Don't just state  $X$ ...
  - First say what  $X$  means... in English...
  - Why is  $X$  important?
- Proofs
  - Before a formal proof or a series of equations, give your intuitive reasoning, and an outline of your proof or derivation,
    - in plain English.



# For Literature Review

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- Bad:

- ~~X did Y. Z did W. Q did R. ...~~
- ~~MethodX did Y, which they show was better than doing Z.~~

**So?** Why should reader care?

The goal is NOT to say WHAT YOU KNOW.

It is to show how this *CURRENT work* relates to others

- Good:

- X did Y. We extend by doing Z.
- X did Y. This differs from our task in that ...



# Literature Review, con't

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- Merge together results that all differ from YOUR system in the same way:

- $X$  did  $Y'$  using hand-coded rules. Our system differs as it *learns* rules for  $Y$ . ...  
 $Z$  did  $Y''$  using hand-coded rules. Our system differs as it *learns* rules for  $Y$ .

⇒

- $X$  did  $Y'$  using hand-coded rules. Later,  $Z$  used hand-coded rules to do  $Y''$ . Our system differs as it *learns* rules for  $Y$ .



# Understand ideas!

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- Ok to use ideas from other!
  - Our *AlgX* is based on *AlgY* [ref]
  - Our *AlgX* combines *AlgY* and *AlgZ* [ref]
  - Our *ProofB* extends *ProofA* [ref]
  
- Be sure YOU understand ideas!
  - Do not just use ideas  
**UNLESS YOU UNDERSTAND THEM!**
  - Those descriptions can be wrong!



# Who should be able to read it?

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## *"Mother test":*

- Your mother should be able to understand...
  - much of the **Intro** (Foundations)
    - What are you doing, and why
  - much of the **Conclusion**
    - What did you accomplish?
- But probably not middle...
  
- True for Papers, Presentations, Posters





# Outline

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- Context
- General Guidelines: Content
- General Guidelines: Form
  - Structure/Order material
  - Avoid Ambiguities
  - Avoid useless phrases
  - Avoid Type Errors
  - Be consistent!
  - Re-read!
    - Examples of re-writing
- Details
- References



# Structure Material!

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- Don't jump too much:
  - If describing **A** and **B**,
    - first describe **A** completely,
    - then describe **B**.
  - If **B** is similar to **A**,  
can simplify the **B** description.
- Say each thing at the correct **SINGLE** location  
... not again and again.



# Order Material Logically

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Sec 4.1 describes **Alg1**, which uses EM and ...  
Sec 4.2 describes **Alg2**, which uses EM and ...  
Sec 4.3 describes **EM**.

- Better: move **EM** to start – Sec4.1
  - ... before **Alg1** and **Alg2**
- Don't say “where  $x_i$  is a feature” on p5 if you have been using  $x_i$  as a feature for previous 4 pages!



# Order Lists Logically...

- Below are some ideas
  1. A typical  $X$  involves  $X1$  and  $X2$ . We can improve  $X2$  by ...
  2. We can modify  $X$  by yadda yadda
  3. As mentioned above,  $X$  involves  $X1$  and  $X2$ . We can tweak  $X2$  by ...

BETTER order:

- Put mod's to  $X2$  together: 1, 3, 2



# Avoid Ambiguities

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- If it is possible for a reader to misunderstand a sentence, s/he will!
  - Don't give them a chance!
  - Make material as clear, and unambiguous, as possible!



# Examples of Ambiguities

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- *Put plastic only in bag1.*  
So can put fruits in bag1... as well as plastic.
- *Put only plastic in bag1.*  
So do NOT put fruit in bag1.

John saw Mary **with a telescope**.

- “with a telescope” is ambiguous: for ABC, or XYZ

John **used a telescope** to see Mary.



# Flow of Sentences

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- Help reader understand material
  - Can you read it and understand it easily?
  - Avoid convoluted, indirect sentences
    - Avoid awkward separated clauses
  - Avoid double negatives
- Expect to re-write and edit extensively!

The fact that our ABCs, trained on pure rating data without content information, can outperform the XYZs, is significant.

It is significant that our ABCs, trained on pure rating data without content information, can outperform the XYZs.



# Wasted words

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- Some expressions do not add anything
  - waste space; annoy readers

As a matter of fact  
Generally  
It is common knowledge that  
As we stated before  
It is very important to note that  
Observe that  
In order to  
Note  
"just", "very"

...and many others that you would use where these appear





# I think..., It is my opinion..., I believe..., etc

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Poor usage:

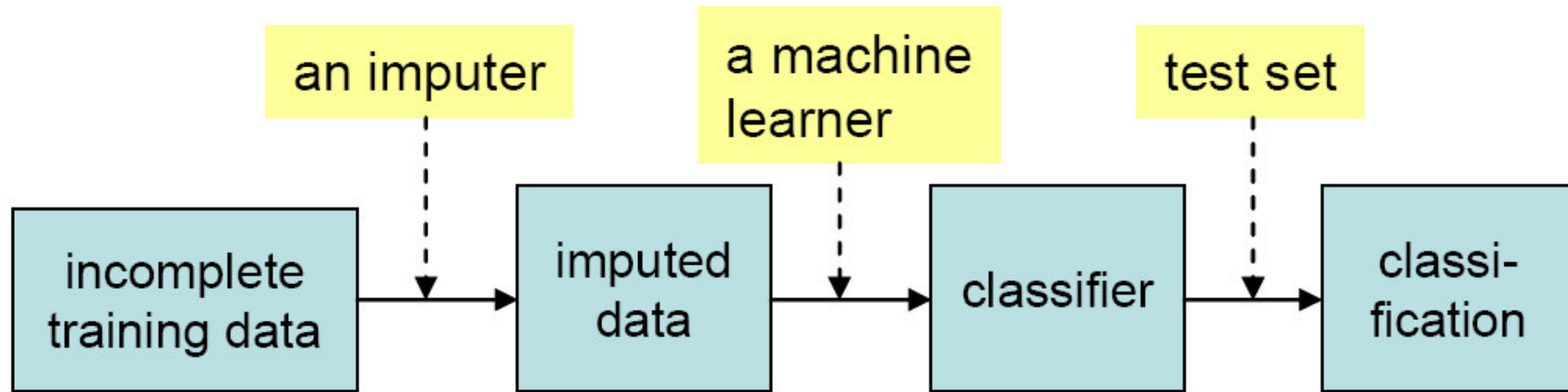
**I believe that** optimizing compilers can reorder data accesses to improve locality.

Better usage:

Optimizing compilers can reorder data accesses to improve locality.

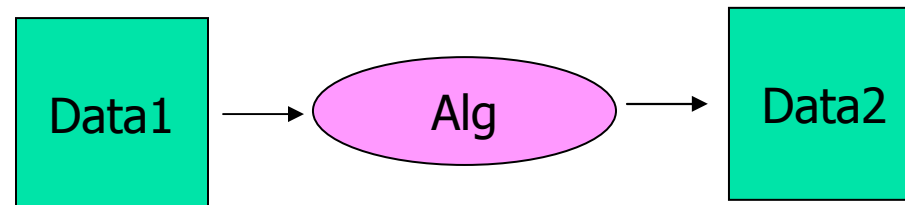
Unless there is a citation at the end of the sentence, or you explicitly stated otherwise, everything that you write is your opinion, your belief, and your thought.

# Avoid Type Errors



- Imputer = alg
- machine learner = alg
- test set = ?? data structure!!
  - Better to be consistent!

Use different notation for Data vs Algorithm





# Be Consistent!

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- Be consistent, including little things:
  - “Web” vs “web”
    - choose one, and use it throughout!
  - Either italicize first line of bullet for all bullets, or for none
  - Either have “heading `<cr>`” for all, or for none
- Otherwise...  
readers will assume there must be some meaning, and waste time ...



# Re-Read

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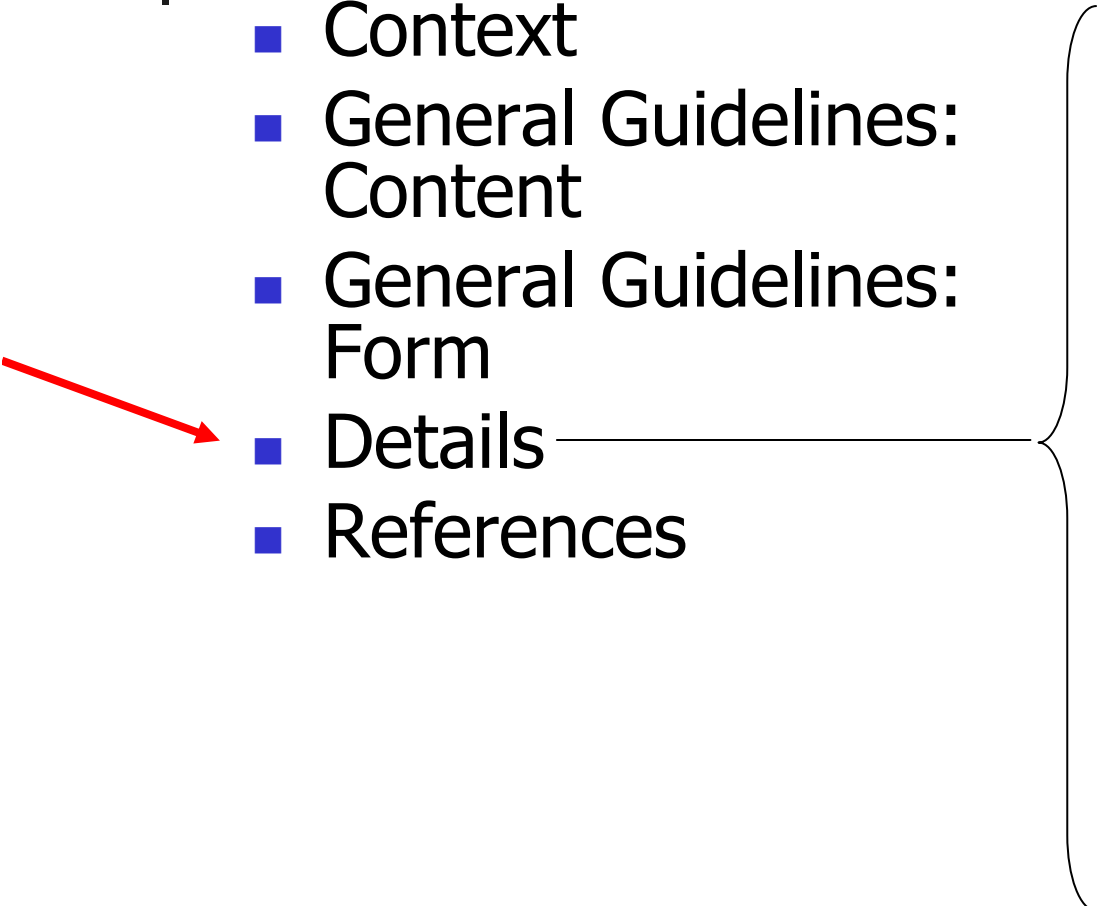
- Re-read your material.  
Does it make sense?

... Collaborative Filtering (CF) is a particular type of Recommendation System. [...]  
Nowadays, the term "CF" refers to all types of Recommendation Systems...



# Outline

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- Context
  - General Guidelines: Content
  - General Guidelines: Form
  - Details
  - References
- Active vs Passive
  - This
  - That vs Which
  - Hyphens
  - Tense
  - Citations
  - Contractions
  - Fumblerrules
  - Abbreviations
  - Spaces
  - Examples
  - LaTeX
- 



# Active vs Passive Voice

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- Keep paragraph all active voice, or all passive.

We explore this counter-intuitive behaviour and a more appropriate solution is presented.



We explore this counter-intuitive behaviour and present a more appropriate solution.

- Actually, keep it all ACTIVE!
  - Ok to use "I" and "we"...
  - Give your program a NAME -- eg, "MyAlg did X"



# Use of “This”

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Avoid using “This” to refer to the meaning of the previous sentence:

## Poor Usage:

The data is written into the outer cylinders of the hard disk. **This** reduces the access time.

## Better Usage:

The data is written into the outer cylinders of the hard disk. **This data distribution** reduces the access time.



# Another “This” Example

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Visiting dignitaries watched yesterday as ground was broken for the new high-energy physics laboratory with a blowout safety wall. **This** is the first visible evidence of the university’s plans for modernization and expansion.

Visiting dignitaries watched yesterday as ground was broken for the new high-energy physics laboratory with a blowout safety wall. **The ceremony afforded** the first visible evidence of the university’s plans for modernization and expansion.





# “which” instead of “that”

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- **that**: defining or restrictive.
  - “The iPod **that** is broken is on my desk.”
  - We are talking about the iPod that is broken, and not about the other one.
- **which**: nondefining or nonrestrictive.
  - “The iPod, **which** is broken, is on my desk.”
  - We only have one iPod; “which” adds the fact that it is broken.
- “The careful writer, watchful for small conveniences, goes *which*-hunting, removes the defining *whiches*, and by so doing improves his work.”



# Hyphens help Parse

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- **Single-address register**
  - a register that has only one address
- **Single address register**
  - only one address register.
- **External-memory run:**
  - A run that is stored in external memory.
- **External memory run:**
  - A memory run that is external.



# Use of past or future tense

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## Poor usage:

Feldmeier **demonstrated** that a routing-table cache **could reduce** the lookup time in network gateways by 65\%~\cite{feldmeierINFOCOM88}.

## Better usage:

Feldmeier **demonstrates** that a routing-table cache **may reduce** the lookup time in network gateways by 65\%~\cite{feldmeierINFOCOM88}.



# Citation at the end of the sentence

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## Poor usage:

Feldmeier~\cite{feldmeierINFOCOM88}

demonstrates that a routing-table cache may reduce the lookup time in network gateways by 65\%.

## Better usage:

Feldmeier demonstrates that a routing-table cache may reduce the lookup time in network gateways by 65\%~\cite{feldmeierINFOCOM88}.



# Correct use of *et al.*

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## Poor usage:

Chiueh *et al.* **designs** a CPU-style IP caching scheme and demonstrates that general-purpose processors can serve as a powerful platform for high-performance IP routing~\cite{chiueh1999}.

## Better usage:

Chiueh *et al.* **design** a CPU-style IP caching scheme and demonstrates that general-purpose processors can serve as a powerful platform for high-performance IP routing~\cite{chiueh1999}.



# Don't, doesn't, isn't

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## Poor usage:

This framework **doesn't** address dynamic compilation.

## Better usage:

This framework **does not** address dynamic compilation.

Avoid contractions in technical writing.



# Avoid negation

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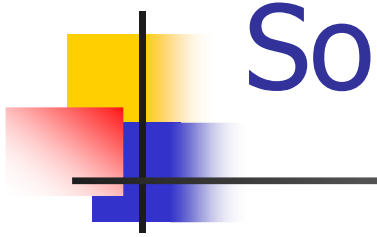
## Poor usage:

This framework **does not** address dynamic compilation.

## Better usage:

This framework **applies to** static compilation.

Make your sentences affirmative.



So

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Poor usage:

Cache memories are built with expensive technology, **so** they are small.

Better usage:

Cache memories are built with expensive technology, **therefore** they are small.

Avoid all colloquialisms in technical writing.





# Fumblerrules, Ia

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- Avoid run-on sentences they are hard to read.
- Don't use no double negatives.
- Use the semicolon properly, always use it where it is appropriate; and never where it isn't.
- Reserve the apostrophe for it's proper use and omit it when its not needed.
- Do not put statements in the negative form.
- Verbs has to agree with their subjects.
- No sentence fragments.
- Proofread carefully to see if you any words out.
- Avoid commas, that are not necessary.
- If you reread your work, you will find on rereading that a great deal of repetition can be avoided by rereading and editing.
- A writer must not shift your point of view.



# Fumblersrules, Ib

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- Eschew dialect, irregardless.
- And don't start a sentence with a conjunction.
- Don't overuse exclamation marks!!!
- Place pronouns as close as possible, especially in long sentences, as of 10 or more words, to their antecedents.
- Hyphenate between syllables and avoid unnecessary hyphens.
- Write all adverbial forms correct.
- Don't use contractions in formal writing.
- Writing carefully, dangling participles must be avoided.
- It is incumbent on us to avoid archaisms.
- If any word is improper at the end of a sentence, a linking verb is.
- Steer clear of incorrect forms of verbs that have snuck in the language.



# Fumblerrules, Ic

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- Take the bull by the hand and avoid mixed metaphors.
- Avoid trendy locutions that sound flaky.
- Never, ever use repetitive redundancies.
- Everyone should be careful to use a singular pronoun with singular nouns in their writing.
- If I've told you once, I've told you a thousand times, resist hyperbole.
- Also, avoid awkward or affected alliteration.
- Don't string too many prepositional phrases together unless you are walking through the valley of the shadow of death.
- Always pick on the correct idiom.
- "Avoid overuse of 'quotation 'marks.'""
- The adverb always follows the verb.
- Last but not least, avoid clichés like the plague; seek viable alternatives.



# Fumblerule-ish

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- Make sure each pronoun agrees with their antecedent.
- Just between you and I, the case of pronoun is important.
- Watch out for irregular verbs which have crept into English.
- Verbs have to agree in number with their subjects.
- Don't use no double negatives.
- Being bad grammar, a writer should not use dangling modifiers.
- Join clauses good like a conjunction should.
- A writer must not shift your point of view.
- About sentence fragments.
- Don't use run-on sentences you got to punctuate them.
- In letters essays and reports use commas to separate items in series.
- Don't use commas, which are not necessary.
- Parenthetical words however should be enclosed in commas.
- It's important to use apostrophes right in everybody's writing.
- Don't abbrev.
- Check to see if you any words out.
- In the case of a report, check to see that jargonwise, it's A-OK.
- As far as incomplete constructions, they are wrong.
- About repetition, the repetition of a word might be real effective repetition - take, for instance the repetition of Abraham Lincoln.
- In my opinion, I think that an author when he is writing should definitely not get into the habit of making use of too many unnecessary words that he does not really need in order to put his message across.
- Use parallel construction not only to be concise but also clarify.
- It behooves us all to avoid archaic expressions.
- Mixed metaphors are a pain in the neck and ought to be weeded out.
- Consult the dictionary to avoid misspellings.
- To ignorantly split an infinitive is a practice to religiously avoid.
- Last but not least, lay off clichés.

**George L. Trigg's Grammar  
(Physics Review Letters, 19 March 1979  
(Volume 42, Issue 12, pp. 747-748))**



# Yet More Fumblerrules

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- Also, avoid annoying alliteration.
- Always finish what you start.
- Always pick on the correct idiom.
- Always end your sentences with a full stop
- Analogies in non-fiction are like feathers on a snake.
- Avoid archaic spellings.
- Avoid clichés like the plague; they're old hat.
- Avoid incorrect terms that have snuck into common usage.
- capitalise every sentence.
- Comparisons are as bad as clichés.
- Contractions aren't necessary and shouldn't be used.
- Do not use foreign words when there is an adequate English quid pro quo.
- Do not indulge in sesquipedalian lexicological constructions.
- Don't repeat yourself or say again that which you have said before.
- Don't use commas that are not, necessary.
- Employ the vernacular.
- Eschew obfuscation.
- Even if a mixed metaphor sings, it should be derailed.
- Exaggeration is a billion times worse than an understatement.
- Go around the barn at high noon to avoid colloquialisms.
- Hopefully, you will use words correctly, irregardless of how others use them
- Never use a big word when a diminutive alternative would suffice.
- One should never generalize.
- One-word sentences? Exterminate!
- Parenthetical remarks (however relevant) are unnecessary.
- Placing a comma between subject and predicate, is not correct.
- Prepositions are not words to end sentences with. It is the sort of bloody nonsense up with which I will not put.
- Punctuation like capitalisation is very important
- Spel chek yor werk.
- The adverb always follows the verb.
- The passive voice is to be avoided.
- Try to be specific.
- Verbs has to agree with their subjects.
- Who needs rhetorical questions?
- Writing carefully, dangling participles must be avoided.

Other fumblerrules created since these lists were published...



# Use Spaces!

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- Use spaces to help reader parse -- eg

$A=f(b(x),g(y))$  forall  $x,y$

$A = f( b(x), g(y) )$  forall  $x,y$



# To save space...

---

- All conferences, and even some journals, have page limits
  - 8 pages? 6 pages? 2 pages?
- Remove irrelevant words/phrases/sentences:

The rest of this paper is organized as follows.

...

Section 6 presents future work and conclusions.



# Common Abbreviations in Academic Writing

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<b>Abbreviation</b>	<b>Latin</b>	<b>English</b>	<b>Follow the abbreviation with:</b>
<i>i.e.</i>	<i>id est</i>	that is	an alternative way of saying the same thing
<i>e.g.</i>	<i>exempli gratia</i>	for example	an example, not an explanation
<i>viz.</i>	<i>videlicet</i>	namely	the specifics





# Common Abbreviations in Academic Writing

---

<b>Abbreviation</b>	<b>Latin</b>	<b>English</b>
<i>etc.</i>	<i>et cetera</i>	and so forth
<i>et al.</i>	<i>et alii</i>	and others
<i>et seq.</i>	<i>et sequentes</i>	and the following
<i>q.v.</i>	<i>quod vide</i>	(for) which see
<i>v.</i>	<i>vide</i>	see
<i>q.e.d.</i>	<i>quod erat demonstrandum</i>	which was to be demonstrated
<i>cf.</i>	<i>confer</i>	compare
<i>vs.</i>	<i>versus</i>	against



# Other Comments

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- Get native English speaker to re-read
- S/He vs They
- just define notation ONCE, then use it
  - ... single nucleotide polymorphism (SNP) ...  
... single nucleotide polymorphism (SNP) ...
- Italicize only first time
  - ... *independent and identically distribution (iid)*.  
... data2 is *iid* ... data3 is *iid* ...



# Examples of Re-wording

---

- A search algorithm that attempts to guess what the correct signs are is used.



A search algorithm attempts to guess the correct signs, is used.



We use a search algorithm that attempts to guess the correct signs

- the baseline imputation technique is found not helpful to improve performance



the baseline imputation technique did not improve performance



# Examples of Re-wording, II

---

- the X dataset has 40% of its users having rated five or fewer items



40% of the X users rated five or fewer items

- The reason X works efficiently is that provided the users are sorted according to their density



X is efficient as the users are sorted according to their density

- required for accurate model estimation



required to accurately estimate a model



# Examples of Re-wording, III

---

- X is found not helpful to improve performance when applied to Y.  
⇒  
X did not improve performance when applied to Y.
- Although  $X$  achieved improved predictive performance  
⇒  
Although  $X$  improved predictive performance
- their performance improvement over Y is not significant  
⇒  
their empirical performance is not significantly better than Y
- only linear time in xxx  
⇒  
only time linear in xxx



# LaTeX issues...

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- To “stretch” limit... follow format but use “savetrees” package
  - <http://www.ctan.org/tex-archive/macros/latex/contrib/savetrees/>



# Line Breaks in LaTeX

---

Do not "justify" paragraphs,  
but rather put a single phrase on each line.

This makes it easier to

- read the text
- scan for phrases
- see the differences from one iteration to the next (eg, using "diff")
- avoid introducing errors, as otherwise

*foo % this had been bar*

may become

*foo % this had*

*been bar*

To illustrate... that previous paragraph, when justified,  
becomes ...



# Line Breaks in LaTeX

---

Do not "justify" paragraphs,

Do not "justify" paragraphs, but rather put a single phrase on each line. This makes it easier to > read the text > scan for phrases > see the differences from one iteration to the next (eg, using "diff") > avoid introducing errors, as otherwise *foo % this had been bar* may become *foo % this had been bar*

To illustrate... that previous paragraph, when justified, becomes ...

may become

*foo % this had  
been bar*


To illustrate... that previous paragraph, when justified, becomes ...





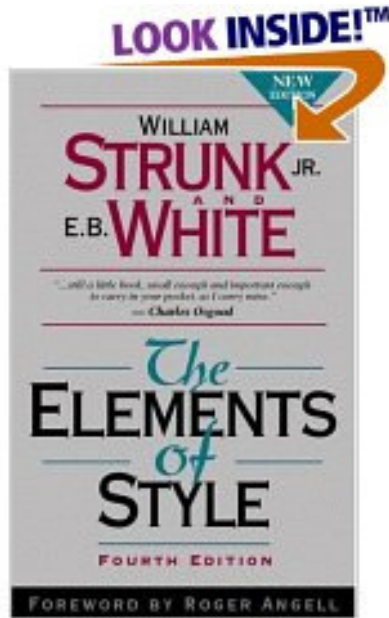
# Outline

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- Context
  - General Guidelines: Content
  - General Guidelines: Form
  - Details
  - References
- 

# Writing References

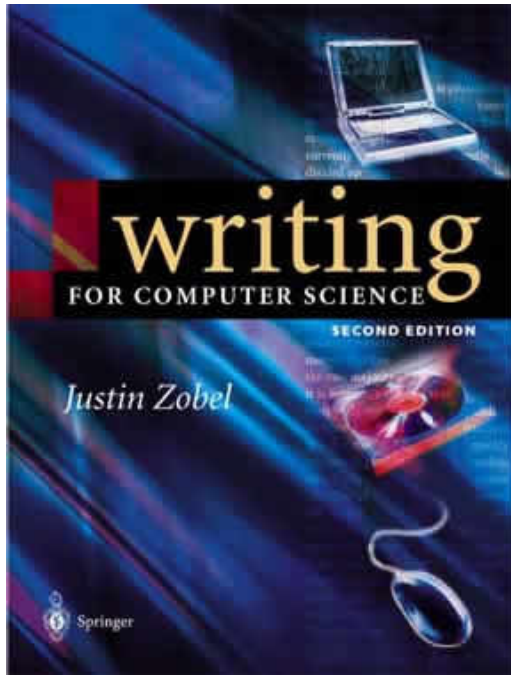
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**The Elements of Style**  
By William Strunk Jr., E.B. White,  
and Roger Angell, Fourth Edition,  
Longman, 2000

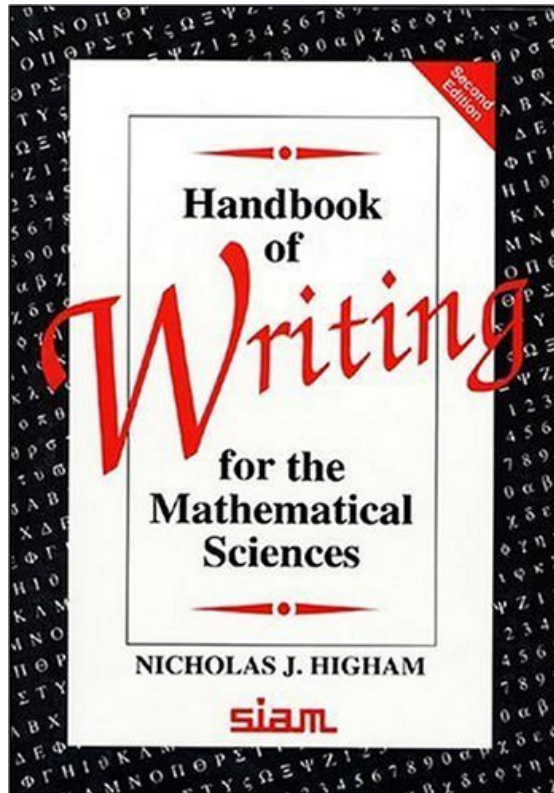
# Writing References

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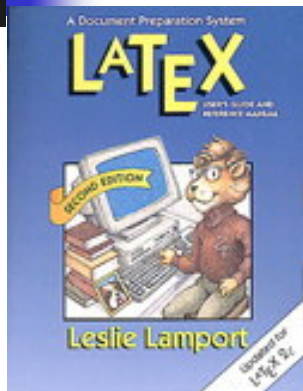
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# Writing References

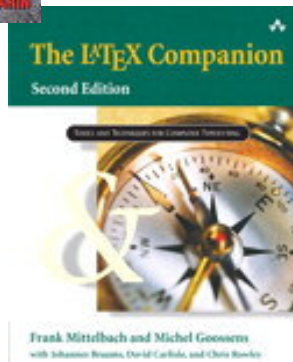
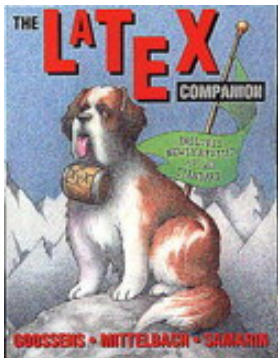


Handbook of Writing for  
The Mathematical Sciences  
By Nicholas J. Higham, Siam, 1993.

# Document Preparation Refs



- *LATEX: A Document Preparation System User's Guide and Reference Manual*, Leslie Lamport, Addison Wesley, 1994.



- *The LATEX Companion*, Michel Goossens, Frank Mittelbach and Alexander Samarin, Addison Wesley, 1994, (second edition: 2004).



# Conclusions

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- Telling a story
  - ... to establish claim
  - including all-&-only material related to claim
- Be accurate
  - state claims precisely
  - understand the material!
- Be clear – don't make readers guess!
  - Avoid ambiguities!
- Re-writing is critical