

Writing Guidelines

1. Logistic Policies

- a. Propose your target deadline at least two months away and fill in the “paper proposal” table at the end of this document, in Appendix C.
- b. If you are the first author of the paper, give Wei *complete* paper draft at least 3 weeks before the actual deadline, with
 - i. All sections, figures, references ready and in compliance with the content/style guidelines below
 - ii. Text as consistent and polished as you can make it, spell checked, and carefully read through
- c. Do not worry about length limit in your first draft. However, do use the template specified by the CFP, or the tightest template (ACM *sig-alternate*, in general) satisfying the format requirement.
- d. You are welcome to share partial drafts with other group members as early as possible, and do not have to wait till the 3-week internal deadline. Feel free to give Wei deadlines for him to give you feedback.
- e. For each accepted conference paper, the first-author needs to finish the first presentation draft (same requirement as papers) 3 weeks before the conference date, and is responsible for scheduling practice talk(s) at least one week before.
- f. Keep the svn/overleaf paper dir small and clean -- containing source texts, style files, figures, and small documents needed for submission. Do not store data or reference papers there, which makes it hard to update the dir at airports, coffee shops, etc.

2. Paper Guidelines

- a. Overall suggestion: learn from good examples (best papers from top conferences)! For survey paper, please try to find the good examples at <https://csur.acm.org/>
- b. Structure (mainly for technical papers and you can also get the insights for your surveys)
 - i. Clearly **define the problem** we are addressing first, then concise yet comprehensive **summary of our solution** (answering the “what” question). One good way to do this is to describe the **input/output** of your solution (“Given @@@, our system will perform @@@ and produce @@@.”)
 - ii. There should be brief discussion about **why the problem cannot be solved with existing approaches**, with more details left for the related work section. (The “why” question)
 - iii. In the introduction, give **summary of technical contributions**, either with bullet list or plain paragraph.

- iv. Organization paragraph can be omitted if space is a concern.
- v. Have an overview section describing the **high-level idea behind the solution, and/or the proposed software/hardware architecture**, if necessary. Also, **define frequently used terms** here, unless they are well known.
- vi. In the design section, go over **key design issues**. Each significant choice should be justified. Draw diagrams if helpful. The goal is that readers in related fields should be able to reproduce our solution and experiments.
- vii. In the results/evaluation section, start by giving clear description of **experiment setup** (both hardware and software, including test workloads – keep eyes on fairness). Describe **the number of repetitions** for each experiment and note that we report the average. Give justifications if error bars are omitted.
- viii. In discussing the results, make sure you give all the **information needed to understand the charts/tables** (x and y meanings, what we are comparing, how parameters are varied ...).
- ix. In the related work section, have prior work classified into categories, and use one paragraph for each. It's OK for one reference to appear in more than one categories. Describe the major **approaches and/or contributions** made by existing work, as well as their **major limitations**. Give more space to the most related work. At the end of each paragraph, summarize **how our work is related**: it could be different or better or complementary, or a combination of those. If you believe that our work is novel in a certain aspect after performing thorough background study, point out so.
- x. The conclusion section does not need to be another “marketing” blob like the abstract. Feel free to use the space to summarize lessons learned and the major takeaway from our study. In other words, **list our most interesting findings**.
- xi. Give the most important message at the **beginning of each paragraph**. One practice that I like is to list, as comment, the purpose of each paragraph on top of it. E.g., “% Brief state-of-the-art summary to demonstrate existing approaches cannot solve our problem.”

c. Prose style

- . Read the book “Elements of Style” (http://www.amazon.com/Elements-Style-4th-William-Strunk/dp/0205313426/ref=sr_1_1?s=books&ie=UTF8&qid=1361375014&sr=1-1&keywords=elements+of+style). Many of our rules below are based on rules in this book (called “the book” in the rest of this guideline doc).
- i. **Every word tells**. Omit words or sentences if they don't give useful information (i.e., losing does not hurt the message). Note that this does not mean all sentences need to be short - a collection of loose, short sentences are to be avoided as well. Refer to the book for examples.
- ii. **Be consistent**. Technically and logically, your paper needs to be consistent in the first place. Beyond that, there are controversial style issues. For example, some people like to treat “data” as singular while others plural. Decide which one you like better and stick with it throughout your paper.

- iii. **Follow the rest of writing rules listed in the book.** One thing not to be followed strictly is the “**use active rather than passive**” suggestion. Be assertive and confident with what we propose/accomplish. For example, say “we designed @@@, a framework for ...”, rather than “@@@ is designed, as a framework for ...”. However, common usage in technical documents, like “All experiments are performed three times and we report the average.”
 - iv. Use **present tense** for most of the paper, though it’s OK to switch to past when describing experiments (we performed, we used ...). Again, be consistent within a section.
 - v. **Citations** should be “add-on” items: they can be **omitted without making the sentence incomplete**. For example, “Smith et al. proposed Icecream [1], a system for ...”, rather than “Smith et al. proposed [1] ...” or “In [1], Smith et al. proposed Icecream, ...”.
 - vi. When giving multiple references together, make sure **reference numbers are sorted** in ascending order. That’s one reason for having our “`lastname:system/conf-year`” cite key format convention.
 - vii. **Capitalize every word in paper title and section headings.**
 - viii. “Work” and “research” are singular. Use “pieces of work”, “projects”, “studies”, “efforts”, etc., if you need to use a plural noun.
 - ix. **Avoid** using (especially creating) **too many acronyms**.
-
- d. Figures and tables
 - . Omit titles embedded in figures. **Use latex captions** for figures/subfigures instead (much easier to change).
 - i. Color helps, especially these days more and more people are reviewing with their devices. However, before you share your first draft, you should make sure that your figures, **printed in B&W, are legible**.
 - ii. **Capitalize only the initial word everywhere**: captions, x & y axis labels, legends, text used in diagrams ... (E.g., “Comparison between x and y approaches”)
 - iii. **Make captions brief and informative**. Be **specific** as much as possible, like “Impact of @@@ parameter on average request processing latency”. Avoid using sentences -- a phrase like in the example above does not need a period at the end. If more explanation is needed in the caption, both the first phrase and subsequent sentences need to end with periods.
 - iv. When adding units to axis labels, **separate the unit and rest of label with space**. E.g., “Average exec. time (s)”.
 - v. **Enlarge fonts and line chart bullets** as long as it doesn’t take much extra space or look disproportional.
 - vi. **Choose bullet style to help readers understand** -- E.g., with four curves showing results for “Approach A - Option 1”, “Approach B - Option 1”, “Approach A - Option 2”, and “Approach B - Option 2”, it’s better to use two groups of bullet shapes (say triangle and circle) for A and B, and two fill patterns (say hollow and solid) for 1 and 2, compared to using 4 shapes. **Avoid using hard-to-see bullet styles** like “+” and “-” (or “x” and “*” simultaneously).

- vii. **Make bar charts more BW-friendly**, by alternating high-contrast fill patterns. E.g., solid-black, solid-white, solid-grey, stripes, dots. Use patterns cautiously, only when you've exhausted the solid ones.
- viii. Design your figures and tables to make the best use of **horizontal space**. Ideally, your object or group of objects should grow "sideways" to fill either one or both columns, with "height" minimized.
- ix. In figures, use fonts with even stroke thickness (such as **Arial**). Fonts like Times don't perform as well at small sizes. Feel free to add **variance** (bold, italic, different fonts, ...) to highlight different types of objects. **Background shades** also helps to group things together without adding more lines.

e. LaTeX styles

.**Add labels** to your sections etc. in consistent way. Examples:

1. "sec:intro", "subsec:search-alg", "subsub:workload"
2. "fig:performance", "table:cost"

i. **Include color definition** in the header file. See examples in Appendix A.

ii. **Use macros** to define names that might be changed later in the writing, such as project names. See examples in Appendix A.

iii. **Use "~"** to make sure the object type and number, such as "Figure 2", are not interrupted by a line break. Example, "... proposed X~\cite{...}, ...", "As shown in Figure~\ref{fig:scalability},".

iv. References

1. All references should be **added to our master bib file** in trunk/bib/th-hpca.bib. **That should be the only bib file** to be included in the paper directory (possibly with a soft link) **from our group**, though collaborators may include their own bib files.
2. **Cite key convention**: last name of first author, plus system name or conference name+year. Examples: {smith:wondertool}, {wang:osdi12}.
3. **Omit unnecessary details** when creating the bib entry, such as page numbers and conference location.
4. Citation numbers in a group should be **sorted in ascending order**. E.g., [1, 5, 37], rather than [5, 1, 37].

3. Slides styles

- a. Make **titles and captions as descriptive as possible** (ask yourself: is it too general? Too narrow? Does it give useful information?)
- b. Every word counts even more here. **Get rid of words that don't bear information** (articles: "the", "a", "an").
- c. That means **maximizing the use of phrases and avoid sentences**. In particular, avoid long sentences or paragraphs. It's very distracting to the audience. Also, phrases or single, short sentences don't need periods at the end.

d. Bullets or sub-bullets grouped together should have **parallel structures or styles**. For example, avoid

- * Goals

- # Improving resource utilization

- # To reduce energy consumption

e. **A picture is worth 1,000 words**. A set of animations even more :).

f. Like in papers, **define terms early**.

g. Have a **balanced structure** (which should be similar to that of a paper).

h. Highlight the following regarding your work

i. **significance**: problem definition (what's wrong now?)

ii. **innovation** (what's new/different/better?)

iii. **technical merits** (what hard problem/challenge is solved and what's interesting about the solution)

iv. **insights and observations, especially surprises**. Your conclusion slide should include a message you'd like your audience to remember, if that's the only thing they remember.

v. **The most important/interesting results**. You don't have space to show all.

- i. **Introduction should be slow enough** to allow most people to follow, but should not take more than 20% of the total presentation time

- j. **Consistent capitalization** (same as for papers)

- k. Use **fonts with even strokes** (like Arial or Sans Comic)

- l. **Make good use of colors**. Do not use too many different colors.

- m. **Avoid directly copying and pasting figures from paper** unless they are colorful and very clear (not fuzzy)

- n. **Include an acknowledgment page**

- .For conference presentations, thank reviewers/collaborators/funding source

- i. For exams, thank advisor/committee members/collaborators/funding source/whoever else you'd like to thank

- o. Exam presentations should include:

- .ACK (adviser, committee members, collaborators/mentors, lab mates etc.)

- i. **Overall thesis theme** (should be repeated through all three exams)

- 1. Slide showing overview of tasks (with publications listed)

- ii. **detailed related work discussion (at least 3 slides + reference slides)**

- iii. A **"plan of work"** table showing remaining work and timeline including

- 1. Current project: development

- 2. Current project: evaluation

- 3. Current project: paper preparation and submission

- 4. Thesis writeup

- p. Have separate slides listing all **references**.

- q. Number of slides

- .20-25 for 30-min conference talk

- i. 15-20 for 20-min short paper or workshop talk

- ii. 35-45 for exams (limit presentation time to 50 minutes)

Appendix A Useful LaTeX Templates/Samples

1. Color definition

```
% Colored text
\definecolor{red}{rgb}{1.00,0.00,0.00}
\definecolor{darkgreen}{rgb}{0.078,0.667,0.016}
\newcommand{\cm}{\textcolor{magenta}}
\newcommand{\cb}{\textcolor{blue}}
\newcommand{\cred}{\textcolor{red}}
\newcommand{\cy}{\textcolor{cyan}}
\newcommand{\cg}{\textcolor{darkgreen}}

% Colored text block environments
\newenvironment{cy_block}{
  \color{cyan}
}{}

```

2. Wrap figure

3: Figure and table side by side

Use the subfigure package and put the caption

4: Tips on squeezing more space out

<http://ravirao.wordpress.com/2005/11/19/latex-tips-to-meet-publication-page-limits/>

5: Remove the copyright space for ACM strict template (acm_proc_article-sp.cls)

```
@@ -591,8 +591,8 @@
- \gdef\@thanks{\gdef\@author{\gdef\@title{\gdef\@subtitle{\let\thanks\relax}
- %\@copyrightspace}
+ \gdef\@thanks{\gdef\@author{\gdef\@title{\gdef\@subtitle{\let\thanks\relax
+ \@copyrightspace}

```

6: Make the reference bib file palm.bib external in your svn repository

```
svn propset svn:externals 'palm.bib
https://svn.csc.ncsu.edu:8443/svn/research-
palm/trunk/bib/palm.bib' .

```

7: If you meet a super long URL in your references, please let it break lines:

```
\usepackage[hidelinks]{hyperref}

```

\usepackage[anythingbreaks]{breakurl}

8: Figure

9: Fit a table inside column

```
\begin{table*}[h]
\resizebox{1\textwidth}{!}{
\scriptsize
\begin{tabular}{|c|c|c|c|c|c|c|c|c|} \hline
Apps & \mpiiop & \apt & \dndc & \swrf & \pwrp & \shentu & \cam
& \awp \\ \hline
\mpiiop
&*(53.5\%,52.5\%)&\textbf{(10.6\%,89.2\%)}&\textbf{(86.9\%,49.7\%)}&(
1.8\%,0.6\%)&*(52.8\%,51.7\%)&\textbf{(24.8\%,78.3\%)}&(1.1\%,0.4\%)&
\textbf{(70.3\%,9.4\%)}\\
\end{tabular}
}
\caption{Experimental results}
\label{table:interference}
\end{table*}
```

Appendix C Paper Submission Schedule/Record

Proposed submissions:

Student name	Conference Name	Paper due	Abs. due	Length	Link to CFP, SVN path
Yang	SC 13	04/26	04/19	10pgs	http://sc13.supercomputing.org/sites/default/files/SC13CallforPapers.pdf
Feng	PACT-13	03/15	03/14	10pgs	http://conferences.inf.ed.ac.uk/pact2013/PACT2013-CFP-Letter.pdf
Fei vCache Share	ATC'14	1/31	1/28	12pgs w/ ref	link
Fei CAFIO	FAST'15	09/23	09/23	12pgs w/o ref	link

Ben	MASCOTS-13	03/28	03/21	10pgs	http://mascots13.conference.nicta.com.au/about/paper-submission/
Ben	EuroSys 14	09/27	10/04	12pgs	http://eurosys2014.vu.nl/EuroSys14-CFP.pdf
Zhiming	SOSP-13	03/28	03/24	13pgs	http://sigops.org/sosp/sosp13/cfp.html
Ye, ML X-Skel	PPoP P 15	Sep 12	Sep 5	10pgs all - inclusive	http://ppopp15.soe.ucsc.edu/cfp/ LinkToSVN
Ye, Fadwa, QEERI	??	Jul ? ?	??	??	
Ye CoPhR	Sigmetrics 15	??	??	??	http:// LinkToSVN
Yang	ATC	01/31/14	01/28/14	12pgs w ref	https://www.usenix.org/conference/atc14/call-for-papers svn path

Appendix D Useful Sample Paragraphs

1. Introduction

1.1 Google Spanner (OSDI 2012): key features of proposed system and the key techniques enabling them

As a globally-distributed database, Spanner provides several interesting features. First, the replication configurations for data can be dynamically controlled at a fine grain by applications. Applications can specify constraints to control which datacenters contain which data, how far data is from its users (to control read latency), how far replicas are from each other (to control write latency), and how many replicas are maintained (to control durability, availability, and read performance). Data can also be dynamically and transparently moved between datacenters by the system to balance resource usage across datacenters. Second, Spanner has two features that are difficult to implement in a distributed database: it provides externally consistent [16] reads and writes, and globally-consistent reads across the database at a time-stamp. These features enable

Spanner to support consistent backups, consistent MapReduce executions [12], and atomic schema updates, all at global scale, and even in the presence of ongoing transactions.

These features are enabled by the fact that Spanner assigns globally-meaningful commit timestamps to transactions, even though transactions may be distributed. The timestamps reflect serialization order. In addition, the serialization order satisfies external consistency (or equivalently, linearizability [20]): if a transaction T1 commits before another transaction T2 starts, then T1's commit timestamp is smaller than T2's. Spanner is the first system to provide such guarantees at global scale.

The key enabler of these properties is a new TrueTime API and its implementation. The API directly exposes clock uncertainty, and the guarantees on Spanner's timestamps depend on the bounds that the implementation provides. If the uncertainty is large, Spanner slows down to wait out that uncertainty. Google's cluster-management software provides an implementation of the TrueTime API. This implementation keeps uncertainty small (generally less than 10ms) by using multiple modern clock references (GPS and atomic clocks).