

Sample ‘Research Highlights’ article for publication in *CACM* in LaTeX Format

[Extended Abstract]

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ABSTRACT

This paper (and accompanying class file) provide a typical example of a \LaTeX document which would be suitable for publication in the *Research Highlights* section of *CACM*.

The style closely mirrors the formatting guidelines for ACM Proceedings so *morphing* a *Proceedings* article into one suitable for publication in *CACM* should be minimal. Just as for Proceedings, it is an *alternate* style which produces a *tighter-looking* paper and was designed in response to concerns expressed, by authors, over page-budgets. It complements the document *Author’s Guide to Preparing CACM Research Highlights articles Using \LaTeX 2_ε and BibTeX*. This source file has been written with the intention of being compiled under \LaTeX 2_ε and BibTeX.

The developers have tried to include every imaginable sort of “bells and whistles”, such as a subtitle, footnotes on title, subtitle and authors, as well as in the text, and every optional component (e.g. Acknowledgments, Additional Authors, etc.), not to mention examples of equations, theorems, tables and figures.

To make best use of this sample document, run it through \LaTeX and BibTeX, and compare this source code with the printed output produced by the dvi file. A compiled PDF version is available on the web page to help you with the ‘look and feel’.

The original version of this paper is entitled “XXX” and was published in (Title of publication, publication date, publisher.)

^{*}A note from Dr. Trovato.

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1. INTRODUCTION

Articles cited to be published in the *Research Highlights* section, of *CACM*, will provide readers with a collection of outstanding research articles, selected from the broad spectrum of computing-research conferences. Submissions for this section are first nominated by Editorial Board Members or Approved Nominating Organizations, and are then subject to final selection by the Editorial Board. Authors are then invited to submit their article, *after they have rewritten and expanded the scope of their articles* as appropriate for the broad readership of *Communications*. It is important to note that publication in *Communications*, a computing-technology and science magazine, does **not** conflict with publication in archival journals. Articles in archival journals are typically expanded versions of conference publications, while *Communications* aims at publishing somewhat shorter and higher-level versions of these articles.

Submissions must address topics of relevance and professional value to a very broad-based readership. It is best to remember that most readers are not experts in the author’s particular discipline, but expect to get a broad perspective on computing practice and research.

ACM seeks to give its articles a uniform, high-quality appearance. To do this, ACM has some rigid requirements for the format of Proceedings, and, thus, since this style is based on the Proceedings style, *CACM Research Highlights* articles will also follow suit. In particular there is a specified format (balanced double columns), a specified set of fonts (Arial or Helvetica and Times Roman) in certain specified sizes (for instance, 9 point for body copy), a specified live area (18 × 23.5 cm [7” × 9.25”]) centered on the page, specified size of margins (2.54cm [1”] top and bottom and 1.9cm [.75”] left and right; specified column width (8.45cm [3.33”]) and gutter size (.083cm [.33”]).

The good news is, with only a handful of manual settings, the \LaTeX document class file handles all of this for you.

Two of these, the `\numberofauthors` and `\alignauthor` commands, you have already used; another, `\bal-`

The remainder of this document is concerned with showing, in the context of an “actual” document, the L^AT_EX commands specifically available for denoting the structure of a proceedings paper, rather than with giving rigorous descriptions or explanations of such commands.

2. THE BODY OF THE PAPER

Typically, the body of a paper is organized into a hierarchical structure, with numbered or unnumbered headings for sections, subsections, sub-subsections, and even smaller sections. The command `\section` that precedes this paragraph is part of such a hierarchy. L^AT_EX handles the numbering and placement of these headings for you, when you use the appropriate heading commands around the titles of the headings. If you want a sub-subsection or smaller part to be unnumbered in your output, simply append an asterisk to the command name. Examples of both numbered and unnumbered headings will appear throughout the balance of this sample document.

We have added additional content to the general body text, additional content that we have excerpted from various sources. Much of this is not only ‘words and spaces’ but complex tables and multi-line display math (see Section ??).

Because the entire article is contained in the `document` environment, you can indicate the start of a new paragraph with a blank line in your input file; that is why this sentence forms a separate paragraph.

2.1 Type Changes and Special Characters

We have already seen several typeface changes in this sample. You can indicate italicized words or phrases in your text with the command `\textit`; emboldening with the command `\textbf` and typewriter-style (for instance, for computer code) with `\texttt`. But remember, you do not have to indicate typestyle changes when such changes are part of the *structural* elements of your article; for instance, the heading of this subsection will be in a sans serif typeface, but that is handled by the document class file. Take care with the use of the curly braces in typeface changes; they mark the beginning and end of the text that is to be in the different typeface.

You can use whatever symbols, accented characters, or non-English characters you need anywhere in your document; you can find a complete list of what is available in the *L^AT_EX User’s Guide* [?].

2.2 Math Equations

You may want to display math equations in three distinct styles: inline, numbered or non-numbered display. Each of the three are discussed in the next sections.

2.2.1 Inline (In-text) Equations

A formula that appears in the running text is called an inline or in-text formula. It is produced by the `math` environment, which can be invoked with the usual `\begin.ancecolumns`, will be used in your very last run of L^AT_EX to ensure balanced column heights on the last page.

This is the second footnote. It starts a series of three footnotes that add nothing informational, but just give an idea of how footnotes work and look. It is a wordy one, just so you see how a longish one plays out.

A third footnote, here. Let’s make this a rather short one to see how it looks.

A fourth, and last, footnote.

. .\end construction or with the short form `$. . . $`. You can use any of the symbols and structures, from α to ω , available in L^AT_EX [?]; this section will simply show a few examples of in-text equations in context. Notice how this equation: $\lim_{n \rightarrow \infty} x = 0$, set here in in-line math style, looks slightly different when set in display style.

2.2.2 Display Equations

A numbered display equation – one set off by vertical space from the text and centered horizontally – is produced by the `equation` environment. An unnumbered display equation is produced by the `displaymath` environment.

Again, in either environment, you can use any of the symbols and structures available in L^AT_EX; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} x = 0 \quad (1)$$

Notice how it is formatted somewhat differently in the `displaymath` environment. Now, we’ll enter an unnumbered equation:

$$\sum_{i=0}^{\infty} x + 1$$

and follow it with another numbered equation:

$$\sum_{i=0}^{\infty} x_i = \int_0^{\pi+2} f \quad (2)$$

just to demonstrate L^AT_EX’s able handling of numbering.

2.3 Citations

Citations to articles [?, ?, ?, ?], conference proceedings [?] or books [?, ?] listed in the Bibliography section of your article will occur throughout the text of your article. You should use BibTeX to automatically produce this bibliography; you simply need to insert one of several citation commands with a key of the item cited in the proper location in the `.tex` file [?]. The key is a short reference you invent to uniquely identify each work; in this sample document, the key is the first author’s surname and a word from the title. This identifying key is included with each item in the `.bib` file for your article.

The details of the construction of the `.bib` file are beyond the scope of this sample document, but more information can be found in the *Author’s Guide*, and exhaustive details in the *L^AT_EX User’s Guide* [?].

This article shows only the plainest form of the citation command, using `\cite`. This is what is stipulated in the SIGS style specifications. No other citation format is endorsed or supported.

2.4 Tables

Because tables cannot be split across pages, the best placement for them is typically the top of the page nearest their initial cite. To ensure this proper “floating” placement of tables, use the environment `table` to enclose the table’s contents and the table caption. The contents of the table itself must go in the `tabular` environment, to be aligned properly in rows and columns, with the desired horizontal and vertical rules. Again, detailed instructions on `tabular` material is found in the *L^AT_EX User’s Guide*.