

# DigiPro Formatting Example and Advice

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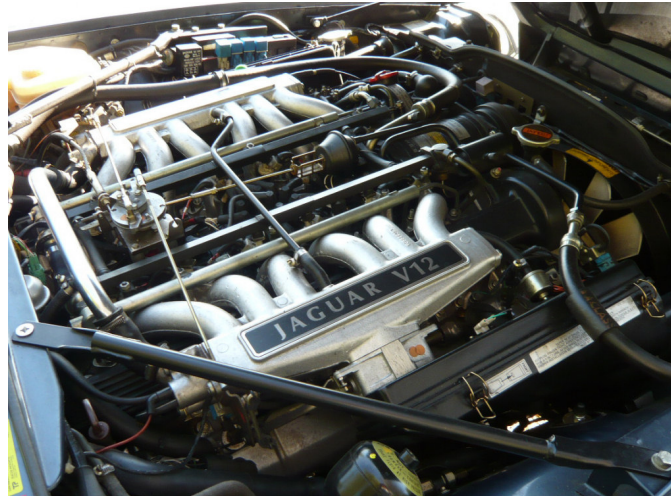


Figure 1: A look under the hood: Jaguar 5.3 liter V12 engine. (Photo by user “Doppelnull” at Wikimedia Commons.)

## ABSTRACT

This article is an example of the  $\LaTeX$  formatting required for published DigiPro papers. The formatting is based on the “acmart” document class which is also used for ACM SIGGRAPH conference proceedings. As well as being an example in itself, this article also gives advice on practical formatting and paper-writing topics such as navigating  $\LaTeX$ , figure and table placement, math formulas, creating a bibliography, and referencing the bibliographic entries in the text.

## CCS CONCEPTS

• **Do Not Use This Code** → **Generate the Correct Terms for Your Paper**; *Generate the Correct Terms for Your Paper*; Generate the Correct Terms for Your Paper; Generate the Correct Terms for Your Paper.

## KEYWORDS

Do, Not, Us, This, Code, Put, the, Correct, Terms, for, Your, Paper

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*DigiPro '24, July 27, 2024, Denver, CO*

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ACM ISBN XXXX-XXXX-X/24/06

<https://doi.org/XXXXXXXX.XXXXXXX>

## ACM Reference Format:

Per Christensen, Lee Kerley, and Cyrus A. Wilson. 2024. DigiPro Formatting Example and Advice. In *Proceedings of the Digital Production Symposium 2024 (DigiPro '24)*. ACM, New York, NY, USA, 7 pages. <https://doi.org/XXXXXXXX.XXXXXXX>

## 1 INTRODUCTION

When submitting a paper or talk to DigiPro, the formatting details are not super important. But if your contribution is accepted, it has to be formatted using a specific style – the same style as used for SIGGRAPH proceedings – to be published in the DigiPro conference proceedings.

This document is intended as a DigiPro-specific supplement to the ACM style guide found at <https://www.acm.org/publications/proceedings-template>. Here we focus on the style elements that are different from general ACM papers, and also give detailed advice on how to handle figures, tables, math, citations and the bibliography. Your paper or talk can be written in  $\LaTeX$  or Microsoft Word, however, this document only discusses  $\LaTeX$ . (For advice on using the correct Word template, please refer to the ACM web pages.)

## 2 GETTING STARTED

This document assumes some basic knowledge of  $\LaTeX$ , but if you have never written a document using  $\LaTeX$ , we recommend Lamport’s excellent book [Lamport 1986] or the nice introduction on the “Learn  $\LaTeX$  in 30 minutes” web page on [overleaf.com](https://www.overleaf.com).

We have found it very convenient to write and collaborate in Overleaf (<https://www.overleaf.com>), which is a free resource for authoring documents in  $\LaTeX$ . It has all the pre-defined classes and

fonts available without having to download and maintain the latest  $\LaTeX$  versions by oneself.

An easy way to get started is to go to the ACM  $\LaTeX$  templates on <https://www.overleaf.com/gallery/tagged/acm-official> and click on the “ACM Conference Proceedings Primary Article Template” link. From there, you can click on the template for the paper called “The Name of the Title is Hope” and use that as the starting point for your own article.

Or even simpler: feel free to copy and modify the source for this document from the following link:

<https://www.overleaf.com/read/fstfqsbzfyx#a71ae6> .

The next four sections (3 to 6) are summaries of the relevant parts of the “The Name of the Title is Hope” document. The sections after that are more detailed advice tailored to DigiPro authors, including common pit-falls, and some  $\LaTeX$  and BibTeX “tricks of the trade”.

### 3 STYLE AND FORMATTING

This section describes the template, typefaces, and sectioning conventions (including acknowledgments and appendices) required for publication.

#### 3.1 Template Overview

We use the “acmart” document class. It can be used to prepare articles for any ACM publication (conference or journal), and for any stage of publication (from review to final “camera-ready” copy), with very few changes to the source. Switching can be done simply by selecting the appropriate *template style* and *template parameters*.

The primary parameter given to the “acmart” document class is the *template style* which corresponds to the type of publication. This parameter is enclosed in square brackets and is a part of the `documentclass` command. For publication in the DigiPro conference proceedings, please use this document class and template style:

```
\documentclass[sigconf]{acmart}
```

#### 3.2 Modifications

ACM SIGGRAPH, and hence DigiPro, has fairly strict formatting rules for final publication. Modifying the template — including but not limited to: adjusting margins, typeface sizes, line spacing, paragraph and list definitions, and the use of the `\vspace` command to manually adjust the vertical spacing between elements of your work — is not allowed.

**Your document will be returned to you for revision if modifications are discovered.**

#### 3.3 Typefaces

The “acmart” document class requires the use of the “Libertine” typeface family. If you have your own  $\TeX$  installation, it should include this set of packages. Overleaf already has them. Please do not substitute other typefaces. The “lmodern” and “limes” packages should not be used, as they will override the built-in typeface families.

### 3.4 Sectioning Commands

Your article or talk should use standard  $\LaTeX$  sectioning commands: `\section{}`, `\subsection{}`, and `\subsubsection{}`. (And perhaps `\paragraph{}` if necessary.) The sections should be numbered; do not remove the numbering from the commands. Section titles will be automatically fully capitalized. For subsections you should capitalize the first letter of most words (similar to the paper title).

Simulating a sectioning command by setting the first word or words of a paragraph in boldface or italicized text is not allowed.

It is often worthwhile giving each section a label; this can be done with `\label{sec:mylabel}` right after the section name. Then you can easily refer to the section number in other parts of the text with `\ref{sec:mylabel}` — and the section number gets automatically updated even if you add or delete new sections.

### 3.5 Acknowledgments

Individuals and groups that assisted in the work and in the preparation of the paper should be included in an acknowledgment section. The acknowledgments should be placed just before the reference section in your document. Authors should not write this section as a numbered or unnumbered `\section` or `\subsection`; instead please use this special environment:

```
\begin{acks}
...
\end{acks}
```

This is to facilitate that the information contained therein can be easily collected during the article metadata extraction phase, and to ensure consistency in the spelling of “acknowledgments” (with only two ‘e’s).

### 3.6 Appendices

If your paper needs an appendix, add it before the “`\end{document}`” command at the conclusion of your source document. Start the appendix with the “`appendix`” command:

```
\appendix
```

Note that sections are lettered, not numbered, in the appendix.

## 4 ABOUT YOU AND YOUR WORK

Now we get to the more interesting part: information about you and your work.

### 4.1 Title Information

The title of your work should use capital letters appropriately — <https://capitalizemytitle.com/> has useful rules for capitalization. Use the `\title` command to define the title of your work. If your work has a subtitle, define it with the `\subtitle` command. Do not insert line breaks in your title.

If your title is lengthy, you must define a short version to be used in the page headers, to prevent overlapping text. The `\title` command has a “short title” parameter:

```
\title[short title]{full title}
```

### 4.2 Authors and Affiliations

Each author must be defined separately for accurate metadata identification. Multiple authors may share one affiliation. Authors’ names

should not be abbreviated; use full first names wherever possible. Include authors' e-mail addresses whenever possible.

Grouping authors' names or e-mail addresses, or providing an "e-mail alias", as shown below, is not acceptable:

```
\author{Brooke Aster, David Mehldau}
\email{dave,judy,steve@university.edu}
\email{firstname.lastname@phillips.org}
```

The `authornote` and `authornotemark` commands allow a note to apply to multiple authors — for example, if the first two authors of an article contributed equally to the work.

If your author list is lengthy, you must define a shortened version of the list of authors to be used in the page headers, to prevent overlapping text. The following command should be placed just after the last `\author{}` definition:

```
\renewcommand{\shortauthors}{McCartney, et al.}
```

Omitting this command will force the use of a concatenated list of all of the authors' names, which may result in overlapping text in the page headers.

The article template's documentation, available at <https://www.acm.org/publications/proceedings-template>, has a complete explanation of these commands and tips for their effective use.

### 4.3 Rights Information

Authors of any work published by ACM must complete a rights form. Depending on the kind of work, and the rights management choice made by the authors, this may be permission, license, or an open access agreement.

Regardless of the rights management choice, the authors will receive a copy of the completed rights form once it has been submitted. This form contains  $\LaTeX$  commands that must be copied into the source document. When the document source is compiled, these commands and their parameters add formatted text to several areas of the final document:

- The "ACM Reference Format" text on the first page.
- The "rights management" text on the first page.
- The conference information in the page headers.

### 4.4 CCS Concepts and User-Defined Keywords

Two elements of the "acmart" document class provide powerful taxonomic tools for you to help readers find your work in an online search.

The ACM Computing Classification System — <https://www.acm.org/publications/class-2012> — is a set of classifiers and concepts that describe the computing discipline. Authors can select entries from this classification system, via <https://dl.acm.org/ccs/ccs.cfm>, and generate the commands to be included in the  $\LaTeX$  source.

User-defined keywords are a comma-separated list of words and phrases of the authors' choosing, providing a more flexible way of describing the research being presented.

CCS concepts and user-defined keywords are required for all articles over two pages in length.

## 5 FIGURES

Figures are important to illustrate the points described in the text, and to show examples of digital production work (both final images and intermediate steps).

### 5.1 Simple Figures

The `figure` environment is used for figures. The definition of a figure looks like this example:

```
\begin{figure}[h]
\centering
\includegraphics[width=\linewidth]{Giulietta.jpg}
\caption{1956 Giulietta Sprint Veloce.}
\label{fig:alfa}
\Description{A technical line drawing of a classic
Alfa Romeo sports car.}
\end{figure}
```

One or more images can be placed within a figure. Make sure to reference all figures in the main text; this is done with a label in each figure definition and `\ref{...}` producing a figure number in the text. For example: Figure 2 shows a detailed technical line drawing of a classic sports car.

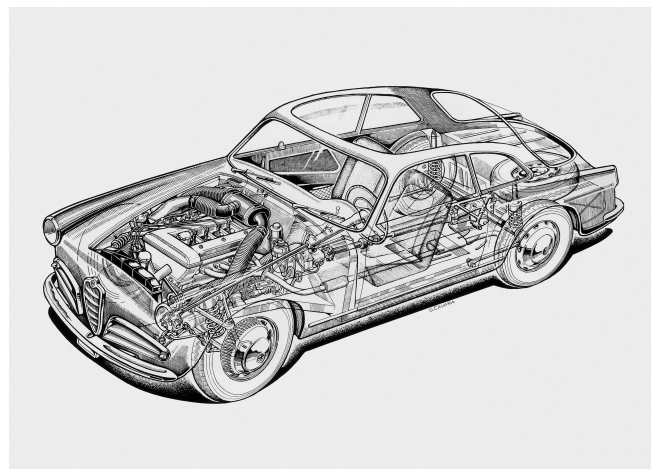


Figure 2: 1956 Giulietta Sprint Veloce.

Your figures should have a caption which describes the figure to the reader. Figure captions are always placed *below* the figure. If your figure contains copyrighted material, you should identify it as such.

Every figure should also have a description. These descriptions convey what's in the image to someone who cannot see it. They are also used by search engine crawlers for indexing images, and when images cannot be loaded. Figure descriptions should not repeat the figure caption — their purpose is to capture important information that is not already provided in the caption or the main text of the paper. For additional information regarding how best to write figure descriptions and why doing this is important, please see <https://www.acm.org/publications/taps/describing-figures/>.

Aim to place each figure on the same page as where it is first referenced if possible (to avoid the reader having to flip pages



Figure 3: 1938 Mercedes-Benz 540K Autobahn-Kurier.

unnecessarily). Sometimes it can feel like  $\LaTeX$  has a mind of its own when it comes to placing the figures, but you can help it along by moving the figure definition up and down in the text until  $\LaTeX$  places the figure where you want it. Some trial and error is often needed.

## 5.2 Two-Column Figures

Sometimes you might want a figure that spans both columns. This is simply done by using the starred version, `figure*`, of the `figure` environment:

```
\begin{figure*}[htb]
  \centering
  \includegraphics[width=4cm]{AutobahnKurier4.jpg}
  \includegraphics[width=4cm]{AutobahnKurier1.jpg}
  \includegraphics[width=4cm]{AutobahnKurier2.jpg}
  \includegraphics[width=4cm]{AutobahnKurier5.jpg}
  \caption{1938 Mercedes-Benz 540K Autobahn-Kurier}
  \label{fig:AutobahnKurier}
  \Description{Four photos of a black Mercedes-Benz
    540K with lots of shiny chrome.}
\end{figure*}
```

Figure 3 shows a very rare Mercedes-Benz from 1938: front view, rear view, grille and headlights, and exhaust pipes.

Regarding figure placement: amusingly, we had to put the definition of this figure among the text of Subsection 5.1 to get  $\LaTeX$  to place the figure where we wanted it, namely on this page where it is referenced (rather than the next page).

## 5.3 The “Teaser Figure”

A “teaser figure” is an optional image, or set of images in one figure, that are placed after the author and affiliation information, and before the body of the article, spanning the page. If you wish to have such a figure in your article, place its definition immediately before the `\maketitle` command:

```
\begin{teaserfigure}
  \includegraphics[width=\textwidth]{sampleteaser}
  \caption{Figure caption}
  \label{fig:teaser}
  \Description{Teaser figure description}
\end{teaserfigure}
```

Don’t forget to reference the teaser figure in the paper text (but not necessarily on the first page). For example: As shown in Figure 1, a Jaguar V12 engine has very complex plumbing and wiring, completely filling the engine compartment

## 6 TABLES

The “acmart” document class includes the “booktabs” package — <https://ctan.org/pkg/booktabs> — for preparing high-quality tables.

Note that table captions should be placed *above* the table (unlike figure captions). Example: Table 1 shows the multiplication rules for quaternions, an extension of complex numbers introduced by William Rowan Hamilton in 1843.

Table 1: Multiplication table for quaternions.

*	1	$i$	$j$	$k$
1	1	$i$	$j$	$k$
$i$	$i$	-1	$k$	$-j$
$j$	$j$	$-k$	-1	$i$
$k$	$k$	$j$	$-i$	-1

To ensure proper 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. Detailed instructions on `tabular` syntax can be found in the  $\LaTeX$  book [Lamport 1986] or online.

To create a wider table across both columns, use the environment `table*` instead of `table`. The best placement for wide tables is typically the top or bottom of the page with their first cite.

## 7 MATH EQUATIONS

$\TeX$  (and  $\LaTeX$ ) is designed to generate visually pleasing math formulas, with all the careful considerations of a professional typographer. But  $\LaTeX$  does need a bit of help to get it all looking beautiful.

### 7.1 The Math Environments

Math formulas should be formatted different than regular text. To make this distinction clear, math can be written inside the `math` environment, i.e. between `\begin{math}` and `\end{math}`. There is also a convenient short form of this using dollar signs:  $\$ \dots \$$ . Important equations should be on separate lines and centered horizontally; such equations are called “display equations”. Numbered display equations are produced by the `equation` environment, and unnumbered display equations are produced by the `displaymath` environment.

## 7.2 Roman, Italic, and Greek Letters

Math formulas are usually written with a combination of letters in italic, such as  $a$  and  $x$ , and Greek letters like  $\alpha$  and  $\omega$  (`\alpha` and `\omega`). However, standard functions such as sine, exponential, and logarithm should be typeset with an upright roman font. These functions are predefined with their correct font with `\sin`, `\exp`, `\log`, etc. For example:

$$f(x) = a \cos(x) + b \sin(x). \quad (1)$$

For less common functions, such as hyperbolic arc-tangent and the like, you have to explicitly change the font to roman or you can define a new function that can be used throughout your paper:

```
\DeclareMathOperator{\atanh}{atanh}
```

A common pit-fall is to use symbols with more than one letter in math formulas. For example, let's say you have a variable called "offset". If you use that name in math mode,  $\LaTeX$  will think it is the product of six terms,  $o$ ,  $f$ ,  $f$ ,  $s$ ,  $e$  and  $t$ , and will typeset their spacing accordingly:  $offset$ . This looks terrible. To avoid this formatting faux-pas, you could put the name of the variable in an `\mbox{}` to make it formatted like regular text, but it is better to choose single-letter symbols in formulas. (You can of course decorate the single letters with subscripts and superscripts using `'_'` and `'^'`.)

Sometimes it can be desirable to "manually" fine-tune spacing in math formulas; this can be done with `\!`, `\,` and `\;`.

Many more details about the intricacies of math formatting can be found in the  $\LaTeX$  book [Lamport 1986].

## 8 CITATIONS

When you write your paper, it is important to discuss all relevant prior and related work. This gives you an opportunity to clarify differences, put your own contributions in perspective, and also to acknowledge other peoples' work. Once you have determined which publications to reference, the next step is to create the bibliography and reference those publications in your paper. No paper is complete without a carefully curated set of references and a consistently formatted bibliography.

We recommend using BibTeX for the preparation and formatting of the bibliography. Here are some rules, suggestions, and advice for how to "do" references in DigiPro papers. If you follow these steps,  $\LaTeX$  will automatically generate a section called "References" with an alphabetical list of all the publications you reference in your text.

### 8.1 References in the Text

The ACM SIGGRAPH style dictates that references must use last names and year [Foley and van Dam 1982], not alphanumeric abbreviations [FvD90] or numbers [1]. To get this style of references, include this command in the preamble of your document:

```
\citetstyle{acmauthoryear}
```

You must assign a label to each publication. Only you will see those labels, but we recommend using the first author's last name and year of publication or author and a short mnemonic title such as "Lamport86" or "Lamport:LaTeX" so it's easy for you to remember the labels.

In the text you can then reference the publication using the `\cite{}` command. For example, if you have a bibliography entry

with the label "Lamport86", `\cite{Lamport86}` will produce the text "[Lamport 1986]".

## 8.2 Writing Style

With this reference style, a common pit-fall is to use the author name(s) in the text and then get a duplicate of the name(s) again due to the citation. For example: "You can read about BibTeX in the  $\LaTeX$  book by Lamport [Lamport 1986]". This looks silly and is a waste of space, especially if there are multiple authors. To avoid this, use the `\shortcite{}` command which only writes the year: "You can read about BibTeX in the  $\LaTeX$  book by Lamport [1986]".

A reference should not be a syntactic element of the text; in other words, the text should be readable also with the stuff inside the square brackets omitted.

Avoid: "In [Gray et al. 2020] it was shown ..." and "[Brown 1980] described a method for ...".

Better: "It has been shown [Gray et al. 2020] that ...". "Brown [1980] described a method for ..." — note use of `\shortcite{}`. "Black et al. [2011; 2003] introduced ...". "Several implementations [Goldfarb and Schwarz 2014; Greene 1986] chose to use ...".

A tiny detail for formatting fiends: When you write "et al." in text,  $\LaTeX$  will think that the period is the end of a sentence (it doesn't know any better) and will put a larger space after that period than is warranted. To avoid this horror, you can use a tilde (a.k.a. "squiggle character") `~` to connect the "al." with the next word: Black et al.~\shortcite{...}.

## 9 BIBLIOGRAPHY

The ACM bibliography style is set and your bibliography file is included in your source document with these two commands, placed just before the `\end{document}` command:

```
\bibliographystyle{ACM-Reference-Format}
\bibliography{bibfile}
```

where "bibfile" is the name (without the ".bib" suffix) of your BibTeX file.

There are many conventions and (sometimes unwritten) rules that must be followed when formatting the entries in the bibliography. Here are some general rules and advice followed by specific instructions for reference types that are common in DigiPro papers.

### 9.1 Author Names

Authors' names should be complete: use full first names "Andrew S. Glassner", not initials "A. S. Glassner" [Glassner 1989]. (However, some publications in fields such as physics commonly use only first initials; for those you have the choice between following the original publication or trying to track down that person's first name via an internet search.)

Author name prefixes such as "von", "van der" and "de" can pose "interesting" questions as far as proper alphabetical ordering — details can be found in the BibTeX documentation. (Hint: prefixes should be ignored with regards to alphabetic ordering even though they are written before the main part of the last name. BibTeX can do this right if you know how to.) Author names with two last names without hyphen, or suffixes such as "Jr." or "III" [Strunk, Jr. and White 1972], also require a bit of special care since BibTeX by

default will assume that the last part of the name is the (last i.e. family) name that should be used for alphabetical ordering.

## 9.2 Capitalization

Book titles should always be capitalized: "The Elements of Style", not "The elements of style" [Strunk, Jr. and White 1972].

Paper title capitalization should be consistent: choose capitalized titles or uncapitalized, and use that choice consistently. Words that should always be capitalized — places and names such as "Monte Carlo" or "Disney" — can be put inside curly braces {} in BibTeX to maintain capitalization. Same for acronyms such as "BRDF".

## 9.3 Journal and Conference Names

For some publications, space is limited, and to save space it is common to abbreviate the title of journals — under the assumption that "everyone" knows what abbreviations such as TOG, CACM, PAMI, JOSA, etc., stand for. But in DigiPro proceedings we don't have to squeeze the space to that degree, so please write out journal names in full for clarity: Transactions on Graphics, Communications of the ACM, Pattern Analysis and Machine Intelligence, Journal of the Optical Society of America, and so on.

Balance between complete information (making the reference easy to find) versus too much unnecessary information. These days with easy internet searches, there is no need to write where a given conference took place, or that ACM's headquarters is located in New York, NY. Also do not repeat information unnecessarily, like writing "ACM" or a location twice in the same entry.

For papers in conference proceedings (but not in a journal or book), you should use the `\inproceedings{}` entry type. BibTeX will automatically indicate that this publication appeared in conference proceedings with the word "In". (This is some kind of "secret inside knowledge" convention shared only in hushed tones among university librarians.) Even though it is not strictly necessary, we recommend starting the booktitle with "Proceedings of", for example "Proceedings of the Digital Production Symposium (DigiPro)".

## 9.4 SIGGRAPH

Many newer SIGGRAPH papers (starting in 2002) appear as articles in special issues of the journal Transactions on Graphics (a.k.a. TOG) [Xie and Hanrahan 2018]. These should have entry type `article` in BibTeX. Some newer SIGGRAPH papers appear in SIGGRAPH proceedings but not TOG [Mosier et al. 2023]. These should use the `inproceedings` type.

Older SIGGRAPH papers appeared as articles in special issues of the journal Computer Graphics [Kajiya 1986].

SIGGRAPH technical talks [Heitz et al. 2019] are often very interesting. Note the "Monte Carlo" (not "monte carlo") in the title of this talk. SIGGRAPH courses [Bargteil and Shinar 2018; Fong et al. 2017] are also a great source of knowledge.

For proceedings, etc., some people prefer to add the year of the conference. For example: ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2018) and ACM SIGGRAPH 2018 Course Notes. That's a bit redundant since the year is already in the entry, but it's acceptable.

## 9.5 Eurographics, EGSR and DigiPro

Newer Eurographics Conference [Liu et al. 2023] and EGSR papers [Wilkie et al. 2014] appear as articles in the journal Computer Graphics Forum and should use the `article` type. Most older EGWR/EGSR papers were published in books called Rendering Techniques [Lafortune and Willems 1996] and should use the `inproceedings` type.

We think DigiPro papers and talks [Andrus 2018; West 2023] are the bee's knees, but we may be biased. They should use the `inproceedings` entry type.

## 9.6 Journal Articles

Some relevant journal articles are from other fields than computer graphics [Coveyou 1969], while some are very much from within our own field [Cook 1986; Greene 1986; Whitted 1980]. For journal articles, please include the journal name, volume, number, and page range or article number (if known).

## 9.7 Theses and Tech Reports

Ph.D and masters theses, as well as technical reports, should include the institution or company where the work was done, and optionally city and country [Veach 1997]. A common convention dictates that Ph.D thesis titles are capitalized while masters thesis titles are not. (A bit of "title snobbery" there?)

## 10 CONCLUSION

Writing a paper first and foremost requires solid technical content presented at an appropriate level of detail for the venue and audience. But once that is in place, it also requires artistic judgement and typographic craftsmanship: placement of figures, typesetting formulas, avoiding ugly line breaks, and more, takes time and care.

This paper has summarized the details involved in formatting a paper following the SIGGRAPH conference style and conventions. After all this, you're now sufficiently fluent in "speaking"  $\LaTeX$  to polish your paper and submit it for final publication in the DigiPro conference proceedings!

## ACKNOWLEDGMENTS

Sections 3 through 6 of this document are based on the Overleaf document "The Name of the Title is Hope", which illustrates the official ACM conference proceedings article template. Some of the text in those sections is a direct copy from there, some is slightly modified, and some is new.

Many thanks to Stephen Spencer, the long serving and infinitely patient editor of all SIGGRAPH and DigiPro proceedings.

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