# **Microsoft Word Author Guidelines for CVPR Proceedings**

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**Abstract**

*The ABSTRACT is to be in fully justified italicized text, at the top of the left-hand column, below the author and affiliation information. Use the word “Abstract” as the title, in 12-point Times, boldface type, centered relative to the column, initially capitalized. The abstract is to be in 10-point, single-spaced type. Leave two blank lines after the Abstract, then begin the main text. Look at previous CVPR abstracts to get a feel for style and length.*

# **Introduction**

## Generative adversarial networks (GANs) are a type of deep learning algorithm that has seen significant development and improvement over the past few years. GANs consist of two neural networks, a generator and a discriminator, that are trained simultaneously in a competitive manner. The generator network produces samples that are intended to be indistinguishable from real data, while the discriminator network attempts to distinguish between real and generated samples. The idea of GANs was first proposed by Ian Goodfellow and colleagues in 2014, and since then, the technique has been applied to a wide range of tasks, such as image generation, text generation, and even audio generation. The ability of GANs to produce highly realistic and diverse samples has led to their widespread use in many different fields.

## One of the key challenges in training GANs is that the generator and discriminator networks can sometimes become unbalanced, leading to suboptimal performance. To address this issue, many different techniques have been developed, such as using more advanced optimization algorithms, adding regularization terms to the loss function, and using more sophisticated network architectures.

## Overall, the development of GANs has led to many exciting advancements in the field of deep learning and has opened up many new possibilities for generating synthetic data.**Language**

All manuscripts must be in English.

## **Dual submission**

Please refer to the author guidelines on the CVPR 2022 web page for a discussion of the policy on dual submissions.

## **Paper length**

Papers, excluding the references section, must be no longer than eight pages in length. The references section will not be included in the page count, and there is no limit on the length of the references section. For example, a paper of eight pages with two pages of references would have a total length of 10 pages. **There will be no extra page charges for CVPR 2022**.

Overlength papers will simply not be reviewed. This includes papers where the margins and formatting are deemed to have been significantly altered from those laid down by this style guide. Note that this guide already sets figure captions and references in a smaller font. The reason such papers will not be reviewed is that there is no provision for supervised revisions of manuscripts. The reviewing process cannot determine the suitability of the paper for presentation in eight pages if it is reviewed in eleven.

## **The ruler**

The LaTeX style defines a printed ruler which should be present in the version submitted for review. The ruler is provided in order that reviewers may comment on particular lines in the paper without circumlocution. If you are preparing a document using a non-LaTeX document preparation system, please arrange for an equivalent ruler to appear on the final output pages. The presence or absence of the ruler should not change the appearance of any other content on the page. The camera-ready copy should not contain a ruler.

Reviewers: note that the ruler measurements do not align well with lines in the paper — this turns out to be very difficult to do well when the paper contains many figures and equations, and, when done, looks ugly. Just use fractional references (*e.g.,* this line is 180.5), although in most cases one would expect that the approximate location will be adequate.

## **Paper ID**

Make sure that the Paper ID from the submission system is visible in the version submitted for review (replacing the “\*\*\*\*” you see in this document).

## **Mathematics**

Please number all of your sections and displayed equations as in these examples:

and

It is important for readers to be able to refer to any particular equation. Just because you did not refer to it in the text does not mean some future reader might not need to refer to it. It is cumbersome to have to use circumlocutions like “the equation second from the top of page 3 column 1”. (Note that the ruler will not be present in the final copy, so is not an alternative to equation numbers). All authors will benefit from reading Mermin’s description of how to write mathematics: <http://www.pamitc.org/documents/mermin.pdf>.

Figure 1: Example of a figure with caption. Captions are set in roman, 9 point. Use a Drawing area to make space for figures.

## **Blind review**

Many authors misunderstand the concept of anonymizing for blind review. Blind review does not mean that one must remove citations to one’s own work—in fact it is often impossible to review a paper unless the previous citations are known and available.

Blind review means that you do not use the words “my” or “our” when citing previous work. That is all. (But see below for tech reports.)

Saying “this builds on the work of Lucy Smith [1]” does not say that you are Lucy Smith, it says that you are building on her work. If you are Smith and Jones, do not say “as we show in [7]”, say “as Smith and Jones show in [7]” and at the end of the paper, include reference 7 as you would any other cited work.

An example of a bad paper just asking to be rejected:

An analysis of the frobnicatable foo filter.

In this paper we present a performance analysis

of our previous paper [1], and show it to be inferior

to all previously known methods. Why the

previous paper was accepted without this analysis

is beyond me.

[1] Removed for blind review

An example of an excellent paper:

An analysis of the frobnicatable foo filter.

In this paper we present a performance analysis of

the paper of Smith et al. [1], and show it to be

inferior to all previously known methods. Why the

previous paper was accepted without this analysis

is beyond me.

[1] Smith, L and Jones, C. “The frobnicatable

foo filter, a fundamental contribution to human

knowledge”. Nature 381(12), 1-213.

If you are making a submission to another conference at the same time, which covers similar or overlapping material, you may need to refer to that submission in order to explain the differences, just as you would if you had previously published related work. In such cases, include the anonymized parallel submission [5] as supplemental material and cite it as

[1] Authors. “The frobnicatable foo filter”, Face and Gesture 2014 submission ID 324, Supplied as additional material efg324.pdf.

Finally, you may feel you need to tell the reader that more details can be found elsewhere, and refer them to a technical report. For conference submissions, the paper must stand on its own, and not *require* the reviewer to go to a tech report for further details. Thus, you may say in the body of the paper “further details may be found in [6]”. Then submit the tech report as supplemental material. Again, you may not assume the reviewers will read this material.

Sometimes your paper is about a problem which you tested using a tool that is widely known to be restricted to a single institution. For example, let’s say it’s 1969, you have solved a key problem on the Apollo lander, and you believe that the CVPR70 audience would like to hear about your solution. The work is a development of your celebrated 1968 paper entitled “Zero-g frobnication: How being the only people in the world with access to the Apollo lander source code makes us a wow at parties”, by Zeus *et al.*

You can handle this paper like any other. Do not write “We show how to improve our previous work [Anonymous, 1968]. This time we tested the algorithm on a lunar lander [name of lander removed for blind review]”. That would be silly, and would immediately identify the authors. Instead write the following:

We describe a system for zero-g frobnication. This system is new because it handles the following cases: A, B. Previous systems [Zeus et al. 1968] didn’t handle case B properly. Ours handles it by including a foo term in the bar integral.

...

The proposed system was integrated with the Apollo lunar lander, and went all the way to the moon, don’t you know. It displayed the following behaviours which show how well we solved cases A and B: ...

As you can see, the above text follows standard scientific convention, reads better than the first version, and does not explicitly name you as the authors. A reviewer might think it likely that the new paper was written by Zeus *et al.*, but cannot make any decision based on that guess. He or she would have to be sure that no other authors could have been contracted to solve problem B.

FAQ

**Q:** Are acknowledgements OK?

**A:** No. Leave them for the final copy.

**Q:** How do I cite my results reported in open challenges?

**A:** To conform with the double-blind review policy, you can report results of other challenge participants together with your results in your paper. For your results, however, you should not identify yourself and should not mention your participation in the challenge. Instead present your results referring to the method proposed in your paper and draw conclusions based on the experimental comparison to other results.

## **Miscellaneous**

When citing a multi-author paper, you may save space by using “et alia”, shortened to “*et al*.” (not “*et. al.*” as “*et*” is a complete word.) If you use the \etal macro provided, then you need not worry about double periods when used at the end of a sentence as in Alpher et al. However, use it only when there are three or more authors. Thus, the following is correct: “Frobnication has been trendy lately. It was introduced by Alpher [3], and subsequently developed by Alpher and Fotheringham-Smythe [1], and Alpher *et al.* [2].”

This is incorrect: “... subsequently developed by Alpher et al. [1] ...” because reference [1] has just two authors.

# **Formatting your paper**

All text must be in a two-column format. The total allowable size of the text area is inches (17.46 cm) wide by inches (22.54 cm) high. Columns are to be inches (8.25 cm) wide, with a inch (0.8 cm) space between them. The main title (on the first page) should begin 1 inch (2.54 cm) from the top edge of the page. The second and following pages should begin 1 inch (2.54 cm) from the top edge. On all pages, the bottom margin should be inches (2.86 cm) from the bottom edge of the page for 8.5 × 11-inch paper; for A4 paper, approximately inches (4.13 cm) from the bottom edge of the page.

## **Margins and page numbering**

Figure 2: Short captions should be centered.

All printed material, including text, illustrations, and charts, must be kept within a print area inches (17.46 cm) wide by inches (22.54 cm) high. Page numbers should be in the footer, centered and inches from the bottom of the page. The review version should have page numbers, yet the final version submitted as camera ready should not show any page numbers.

## **Type style and fonts**

Wherever Times is specified, Times Roman may also be used. If neither is available on your word processor, please use the font closest in appearance to Times to which you have access.

MAIN TITLE. Center the title inches (3.49 cm) from the top edge of the first page. The title should be in Times 14-point, boldface type. Capitalize the first letter of nouns, pronouns, verbs, adjectives, and adverbs; do not capitalize articles, coordinate conjunctions, or prepositions (unless the title begins with such a word). Leave two blank lines after the title.

AUTHOR NAME(s) and AFFILIATION(s) are to be centered beneath the title and printed in Times 12-point, non-boldface type. This information is to be followed by two blank lines.

The ABSTRACT and MAIN TEXT are to be in a two-column format.

MAIN TEXT. Type main text in 10-point Times, single-spaced. Do NOT use double-spacing. All paragraphs should be indented 1 pica (approx. 1/6 inch or 0.422 cm). Make sure your text is fully justified—that is, flush left and flush right. Please do not place any additional blank lines between paragraphs.

Figure and table captions should be 9-point Roman type as in Figs. 1 and 2. Short captions should be centered.

Callouts should be 9-point Helvetica, non-boldface type. Initially capitalize only the first word of section titles and first-, second-, and third-order headings.

FIRST-ORDER HEADINGS. (For example, **1. Introduction**) should be Times 12-point boldface, initially capitalized, flush left, with one blank line before, and one blank line after.

SECOND-ORDER HEADINGS. (For example, **1.1 Database elements**) should be Times 11-point boldface, initially capitalized, flush left, with one blank line before, and one after. If you require a third-order heading (we discourage it), use 10-point Times, boldface, initially capitalized, flush left, preceded by one blank line, followed by a period and your text on the same line.

## **Footnotes**

Please use footnotes[[1]](#footnote-1) sparingly. Indeed, try to avoid footnotes altogether and include necessary peripheral observations in the text (within parentheses, if you prefer, as in this sentence). If you wish to use a footnote, place it at the bottom of the column on the page on which it is referenced. Use Times 8-point type, single-spaced.

## **References**

List and number all bibliographical references in 9-point Times, single-spaced, at the end of your paper. When referenced in the text, enclose the citation number in square brackets, for example [5]. Where appropriate, include page numbers and the name(s) of editors of referenced books. When you cite multiple papers at once, please make sure that you cite them in numerical order like this [1, 2, 4-6].

## **Illustrations, graphs, and photographs**

All graphics should be centered. Please ensure that any point you wish to make is resolvable in a printed copy of the paper. Resize fonts in figures to match the font in the body text, and choose line widths which render effectively in print. Readers (and reviewers), even of an electronic copy, may choose to print your paper in order to read it. You cannot insist that they do otherwise, and therefore must not assume that they can zoom in to see tiny details on a graphic.

## **Color**

Please refer to the author guidelines on the CVPR 2022 web page for a discussion of the use of color in your document.

If you use color in your plots, please keep in mind that a significant subset of reviewers and readers may have a color vision deficiency; red-green blindness is the most frequent kind. Hence avoid relying only on color as the discriminative feature in plots (such as red *vs.* green lines), but add a second discriminative feature to ease disambiguation.

# **Final copy**

You must include your signed IEEE copyright release form when you submit your finished paper. We MUST have this form before your paper can be published in the proceedings. Please direct any questions to the production editor in charge of these proceedings at the IEEE Computer Society Press: <https://www.computer.org/about/contact>

# **References**

1. FirstName Alpher, Frobnication. *IEEE TPAMI*, 12(1):234– 778, 2002.
2. FirstName Alpher and FirstName Fotheringham-Smythe. Frobnication revisited. *Journal of Foo*, 13(1):234–778, 2003.
3. FirstName Alpher, FirstName Fotheringham-Smythe, and FirstName Gamow. Can a machine frobnicate? *Journal of Foo*, 14(1):234–778, 2004.
4. FirstName Alpher and FirstName Gamow. Can a computer frobnicate? In *CVPR*, pages 234–778, 2005.
5. FirstName LastName. The frobnicatable foo filter, 2014. Face and Gesture submission ID 324. Supplied as supplemental material fg324.pdf.
6. FirstName LastName. Frobnication tutorial, 2014. Supplied as supplemental material tr.pdf.

1. This is what a footnote looks like. It often distracts the reader from the main flow of the argument. [↑](#footnote-ref-1)