# BERT Vision

**Siduo Jiang**
UC Berkeley

**William Casey King**
UC Berkeley

**Cristopher Benge**
UC Berkeley

## Abstract

Abstract goes here. This is some filler text to give you an idea of how the wrapping and margins work for the paper abstract. You are free to change whatever text you like here, so long as Daniel Cer thinks its cool. That's what Casey would say, anyways - we want to make sure Dan is, like, so super comfortable and everything.

## 1 Introduction

Introduce yourself, **suckahead!**

## 2 Background

My background is in hip-hop and electronic dance. hbu?

## 3 Methods

Our method is to cater to the whims and fancies of academics, renowned for their superlative intellect - and distinguished taste to match!

What could go wrong??

**LATEX-specific details:** Here's a sample paragraph that's named, do you think i'm cool?

## 4 Results

Get results; go $BIG$or go Home!
Also, check out Tenney when you get a chance (Tenney et al., 2020).

## 5 Analysis

Examine the ordinary (and if it's the ordinary you're in to... look no further than this ACL format!)

## 6 Future Work

I say we give up this **CS** gig, and get into the exciting field of Telemarketing!

## 7 Formatting Instructions

Manuscripts must be in two-column format. Exceptions to the two-column format include the title, authors' names and complete addresses, which must be centered at the top of the first page, and any full-width figures or tables (see the guidelines in Section 7.5). **Type single-spaced.** Start all pages directly under the top margin. The manuscript should be printed single-sided and its length should not exceed the maximum page limit described in Section **??**. Pages should be numbered in the version submitted for review, but **pages should not be numbered in the camera-ready version**.

**LATEX-specific details:** The style files will generate page numbers when \aclfinalcopy is commented out, and remove them otherwise.

### 7.1 File Format

For the production of the electronic manuscript you must use Adobe's Portable Document Format (PDF). Please make sure that your PDF file includes all the necessary fonts (especially tree diagrams, symbols, and fonts with Asian characters). When you print or create the PDF file, there is usually an option in your printer setup to include none, all or just non-standard fonts. Please make sure that you select the option of including ALL the fonts. **Before sending it, test your PDF by printing it from a computer different from the one where it was created.** Moreover, some word processors may generate very large PDF files, where each page is rendered as an image. Such images may reproduce poorly. In this case, try alternative ways to obtain the PDF. One way on some systems is to install a driver for a postscript printer, send your document to the printer specifying "Output to a file", then convert the file to PDF.

It is of utmost importance to specify the **A4 format** (21 cm x 29.7 cm) when formatting the paper. Print-outs of the PDF file on A4 paper should be

identical to the hardcopy version. If you cannot meet the above requirements about the production of your electronic submission, please contact the publication chairs as soon as possible.

**LATEX-specific details:** PDF files are usually produced from LATEX using the `pdflatex` command. If your version of LATEX produces Postscript files, `ps2pdf` or `dvipdf` can convert these to PDF. To ensure A4 format in LATEX, use the command `\special{papersize=210mm,297mm}` in the LATEX preamble (below the `\usepackage` commands) and use `dvipdf` and/or `pdflatex`; or specify `-t a4` when working with `dvips`.

## 7.2 Layout

Format manuscripts two columns to a page, in the manner these instructions are formatted. The exact dimensions for a page on A4 paper are:

- Left and right margins: 2.5 cm

- Top margin: 2.5 cm

- Bottom margin: 2.5 cm

- Column width: 7.7 cm

- Column height: 24.7 cm

- Gap between columns: 0.6 cm

Papers should not be submitted on any other paper size. If you cannot meet the above requirements about the production of your electronic submission, please contact the publication chairs above as soon as possible.

## 7.3 Fonts

For reasons of uniformity, Adobe's **Times Roman** font should be used. If Times Roman is unavailable, you may use Times New Roman or **Computer Modern Roman**.

Table 1 specifies what font sizes and styles must be used for each type of text in the manuscript.

**LATEX-specific details:** To use Times Roman in LATEX2e, put the following in the preamble:

```
\usepackage{times}
\usepackage{latexsym}
```

| Type of Text | Font Size | Style |
|---|---|---|
| paper title | 15 pt | bold |
| author names | 12 pt | bold |
| author affiliation | 12 pt | |
| the word "Abstract" | 12 pt | bold |
| section titles | 12 pt | bold |
| subsection titles | 11 pt | bold |
| document text | 11 pt | |
| captions | 10 pt | |
| abstract text | 10 pt | |
| bibliography | 10 pt | |
| footnotes | 9 pt | |

Table 1: Font guide.

## 7.4 Ruler

A printed ruler (line numbers in the left and right margins of the article) should be presented in the version submitted for review, so that reviewers may comment on particular lines in the paper without circumlocution. 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 may 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. In most cases one would expect that the approximate location will be adequate, although you can also use fractional references (*e.g.*, this line ends at mark 295.5).

**LATEX-specific details:** The style files will generate the ruler when `\aclfinalcopy` is commented out, and remove it otherwise.

## 7.5 Title and Authors

Center the title, author's name(s) and affiliation(s) across both columns. Do not use footnotes for affiliations. Place the title centered at the top of the first page, in a 15-point bold font. Long titles should be typed on two lines without a blank line intervening. Put the title 2.5 cm from the top of the page, followed by a blank line, then the author's names(s), and the affiliation on the following line. Do not use only initials for given names (middle initials are allowed). Do not format surnames in all capitals (*e.g.*, use "Mitchell" not "MITCHELL"). Do not format title and section headings in all capitals except for proper names (such as "BLEU") that

are conventionally in all capitals. The affiliation should contain the author's complete address, and if possible, an electronic mail address.

The title, author names and addresses should be completely identical to those entered to the electronical paper submission website in order to maintain the consistency of author information among all publications of the conference. If they are different, the publication chairs may resolve the difference without consulting with you; so it is in your own interest to double-check that the information is consistent.

Start the body of the first page 7.5 cm from the top of the page. **Even in the anonymous version of the paper, you should maintain space for names and addresses so that they will fit in the final (accepted) version.**

### 7.6 Abstract

Use two-column format when you begin the abstract. Type the abstract at the beginning of the first column. The width of the abstract text should be smaller than the width of the columns for the text in the body of the paper by 0.6 cm on each side. Center the word **Abstract** in a 12 point bold font above the body of the abstract. The abstract should be a concise summary of the general thesis and conclusions of the paper. It should be no longer than 200 words. The abstract text should be in 10 point font.

### 7.7 Text

Begin typing the main body of the text immediately after the abstract, observing the two-column format as shown in the present document.

Indent 0.4 cm when starting a new paragraph.

### 7.8 Sections

Format section and subsection headings in the style shown on the present document. Use numbered sections (Arabic numerals) to facilitate cross references. Number subsections with the section number and the subsection number separated by a dot, in Arabic numerals.

### 7.9 Footnotes

Put footnotes at the bottom of the page and use 9 point font. They may be numbered or referred to by asterisks or other symbols.[1] Footnotes should be separated from the text by a line.[2]

---

[1] This is how a footnote should appear.

[2] Note the line separating the footnotes from the text.

| Command | Output | Command | Output |
|---------|--------|---------|--------|
| {\"a} | ä | {\c c} | ç |
| {\^e} | ê | {\u g} | ğ |
| {\`i} | ì | {\l} | ł |
| {\.I} | İ | {\~n} | ñ |
| {\o} | ø | {\H o} | ő |
| {\'u} | ú | {\v r} | ř |
| {\aa} | å | {\ss} | ß |

Table 2: Example commands for accented characters, to be used in, *e.g.*, BIBTEX names.

### 7.10 Graphics

Place figures, tables, and photographs in the paper near where they are first discussed, rather than at the end, if possible. Wide illustrations may run across both columns. Color is allowed, but adhere to Section **??**'s guidelines on accessibility.

**Captions:** Provide a caption for every illustration; number each one sequentially in the form: "Figure 1. Caption of the Figure." "Table 1. Caption of the Table." Type the captions of the figures and tables below the body, using 10 point text. Captions should be placed below illustrations. Captions that are one line are centered (see Table 1). Captions longer than one line are left-aligned (see Table 2).

**LaTeX-specific details:** The style files are compatible with the caption and subcaption packages; do not add optional arguments. **Do not override the default caption sizes.**

### 7.11 Hyperlinks

Within-document and external hyperlinks are indicated with Dark Blue text, Color Hex #000099.

### 7.12 Citations

Citations within the text appear in parentheses as (Kim et al., 2016) or, if the author's name appears in the text itself, as Kim et al. (2016). Append lowercase letters to the year in cases of ambiguities. Treat double authors as in (Rajpurkar et al., 2016), but write as in (Devlin et al., 2019) when more than two authors are involved. Collapse multiple citations as in (Devlin et al., 2019; Kim et al., 2016).

Refrain from using full citations as sentence constituents. Instead of

"(Devlin et al., 2019) showed that ..."

write

> "Devlin et al. (2019) showed that ..."

**LATEX-specific details:** Table 3 shows the syntax supported by the style files. We encourage you to use the natbib styles. You can use the command `\citet` (cite in text) to get "author (year)" citations as in Devlin et al. (2019). You can use the command `\citep` (cite in parentheses) to get "(author, year)" citations as in (Devlin et al., 2019). You can use the command `\citealp` (alternative cite without parentheses) to get "author year" citations (which is useful for using citations within parentheses, as in Devlin et al., 2019).

### 7.13 References

Gather the full set of references together under the heading **References**; place the section before any Appendices. Arrange the references alphabetically by first author, rather than by order of occurrence in the text.

Provide as complete a citation as possible, using a consistent format, such as the one for *Computational Linguistics* or the one in the *Publication Manual of the American Psychological Association* (Limaye et al., 2019). Use full names for authors, not just initials.

Submissions should accurately reference prior and related work, including code and data. If a piece of prior work appeared in multiple venues, the version that appeared in a refereed, archival venue should be referenced. If multiple versions of a piece of prior work exist, the one used by the authors should be referenced. Authors should not rely on automated citation indices to provide accurate references for prior and related work.

The following text cites various types of articles so that the references section of the present document will include them.

- Example article in journal: (Limaye et al., 2019).

- Example article in proceedings, with location: (Limaye et al., 2019).

- Example article in proceedings, without location: (Limaye et al., 2019).

- Example arxiv paper: (Limaye et al., 2019).

**LATEX-specific details:** The LATEX and BibTEX style files provided roughly follow the American Psychological Association format. If your own bib file is named `acl2020.bib`, then placing the following before any appendices in your LATEX file will generate the references section for you:

```
\bibliographystyle{acl_natbib}
\bibliography{acl2020}
```

You can obtain the complete ACL Anthology as a BibTEX file from `https://aclweb.org/anthology/anthology.bib.gz`. To include both the anthology and your own bib file, use the following instead of the above.

```
\bibliographystyle{acl_natbib}
\bibliography{anthology,acl2020}
```

### 7.14 Digital Object Identifiers

As part of our work to make ACL materials more widely used and cited outside of our discipline, ACL has registered as a CrossRef member, as a registrant of Digital Object Identifiers (DOIs), the standard for registering permanent URNs for referencing scholarly materials.

All camera-ready references are required to contain the appropriate DOIs (or as a second resort, the hyperlinked ACL Anthology Identifier) to all cited works. Appropriate records should be found for most materials in the current ACL Anthology at `http://aclanthology.info/`. As examples, we cite (Limaye et al., 2019) to show you how papers with a DOI will appear in the bibliography. We cite (Limaye et al., 2019) to show how papers without a DOI but with an ACL Anthology Identifier will appear in the bibliography.

**LATEX-specific details:** Please ensure that you use BibTEX records that contain DOI or URLs for any of the ACL materials that you reference. If the BibTEX file contains DOI fields, the paper title in the references section will appear as a hyperlink to the DOI, using the hyperref LATEX package.

### 7.15 Appendices

Appendices, if any, directly follow the text and the references (but only in the camera-ready; see Appendix A). Letter them in sequence and provide an informative title: **Appendix A. Title of Appendix**.

### Acknowledgments

The acknowledgments should go immediately before the references. Do not number the acknowl-

| Output | natbib command | Old ACL-style command |
|---|---|---|
| (Devlin et al., 2019) | `\citep` | `\cite` |
| Devlin et al., 2019 | `\citealp` | no equivalent |
| Devlin et al. (2019) | `\citet` | `\newcite` |
| (2019) | `\citeyearpar` | `\shortcite` |

Table 3: Citation commands supported by the style file. The style is based on the natbib package and supports all natbib citation commands. It also supports commands defined in previous ACL style files for compatibility.

edgments section. Do not include this section when submitting your paper for review.

## References

Jacob Devlin, Ming Wei Chang, Kenton Lee, and Kristina Toutanova. 2019. BERT: Pre-training of deep bidirectional transformers for language understanding. In *NAACL HLT 2019 - 2019 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies - Proceedings of the Conference*.

Yoon Kim, Yacine Jernite, David Sontag, and Alexander M. Rush. 2016. Character-Aware neural language models. In *30th AAAI Conference on Artificial Intelligence, AAAI 2016*.

Girish Limaye, Manish Pandit, and Sawal Vinay. 2019. BertNet: Combining BERT language representation with Attention and CNN for Reading Comprehension.

Pranav Rajpurkar, Jian Zhang, Konstantin Lopyrev, and Percy Liang. 2016. SQuad: 100,000+ questions for machine comprehension of text. In *EMNLP 2016 - Conference on Empirical Methods in Natural Language Processing, Proceedings*.

Ian Tenney, Dipanjan Das, and Ellie Pavlick. 2020. BERT rediscovers the classical NLP pipeline. In *ACL 2019 - 57th Annual Meeting of the Association for Computational Linguistics, Proceedings of the Conference*.

## A    Appendices

Appendices are material that can be read, and include lemmas, formulas, proofs, and tables that are not critical to the reading and understanding of the paper. Appendices should be **uploaded as supplementary material** when submitting the paper for review. Upon acceptance, the appendices come after the references, as shown here.

**LaTeX-specific details:** Use `\appendix` before any appendix section to switch the section numbering over to letters.

## B    Supplemental Material

Submissions may include non-readable supplementary material used in the work and described in the paper. Any accompanying software and/or data should include licenses and documentation of research review as appropriate. Supplementary material may report preprocessing decisions, model parameters, and other details necessary for the replication of the experiments reported in the paper. Seemingly small preprocessing decisions can sometimes make a large difference in performance, so it is crucial to record such decisions to precisely characterize state-of-the-art methods.

Nonetheless, supplementary material should be supplementary (rather than central) to the paper. **Submissions that misuse the supplementary material may be rejected without review.** Supplementary material may include explanations or details of proofs or derivations that do not fit into the paper, lists of features or feature templates, sample inputs and outputs for a system, pseudocode or source code, and data. (Source code and data should be separate uploads, rather than part of the paper).

The paper should not rely on the supplementary material: while the paper may refer to and cite the supplementary material and the supplementary material will be available to the reviewers, they will not be asked to review the supplementary material.