The evaluation and restoration of PTQ models' conversational capabilities

Anonymous ACL submission

Abstract

This document is a supplement to the general instructions for *ACL authors. It contains instructions for using the LaTeX style files for ACL conferences. The document itself conforms to its own specifications, and is therefore an example of what your manuscript should look like. These instructions should be used both for papers submitted for review and for final versions of accepted papers.

1 Introduction

2 Related Work

Quantization Survey: Evaluating Quantized Large Language Models (Li et al., 2024), Give me BF16 or give me death (Kurtic et al., 2024), A Comprehensive Evaluation of Quantization Strategies for Large Language Models (Jin et al., 2024) An Empirical Study of LLaMA3 Quantization: From LLMs to MLLMs(Huang et al., 2024)

Evaluation Benchmarks: Base of RoPE Bounds Context Length (Xu et al., 2024), Can perplexity reflect large language model's ability in long text understanding?(Hu et al., 2024)

Quantization Methods: GPTQ (Frantar et al., 2022), QLoRA (Dettmers et al., 2023), SmoothQuant (Xiao et al., 2023), AWQ (Lin et al., 2024), OWQ (Lee et al., 2024a), OmniQuant (Shao et al., 2024), LRQuant(Zhao et al., 2024),SpQR (Dettmers et al., 2024),LLM.int8() (Dettmers et al., 2022)

- Mixed Precision Quantization. (1) Magnitude-based. (2) Saliency-based.
- Ultra low-bit Quantization.

Reinforcement learning: Improving Conversational Abilities of Quantized Large Language Models via Direct Preference Alignment (Lee et al., 2024b), REFT: Reasoning with REinforced Fine-Tuning (Trung et al., 2024), Let's verify step by step (Lightman et al., 2024), Understanding Reinforcement Learning-Based Fine-Tuning of Diffusion Models: A Tutorial and Review (Uehara et al., 2024)

3 Preliminary

4 Methods

5 experiments

Limitations

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A Example Appendix

These instructions are for authors submitting papers to *ACL conferences using LaTeX. They are not self-contained. All authors must follow the general instructions for *ACL proceedings,[1] and this document contains additional instructions for the LaTeX style files.

The templates include the LaTeX source of this document (`acl_latex.tex`), the LaTeX style file used to format it (`acl.sty`), an ACL bibliography style (`acl_natbib.bst`), an example bibliography (`custom.bib`), and the bibliography for the ACL Anthology (`anthology.bib`).

B Engines

To produce a PDF file, pdfLaTeX is strongly recommended (over original LaTeX plus dvips+ps2pdf or dvipdf). XeLaTeX also produces PDF files, and is especially suitable for text in non-Latin scripts.

C Preamble

The first line of the file must be

```
\documentclass[11pt]{article}
```

To load the style file in the review version:

```
\usepackage[review]{acl}
```

For the final version, omit the `review` option:

```
\usepackage{acl}
```

To use Times Roman, put the following in the preamble:

```
\usepackage{times}
```

(Alternatives like txfonts or newtx are also acceptable.)

Please see the LaTeX source of this document for comments on other packages that may be useful.

Set the title and author using `\title` and `\author`. Within the author list, format multiple authors using `\and` and `\And` and `\AND`; please see the LaTeX source for examples.

By default, the box containing the title and author names is set to the minimum of 5 cm. If you need more space, include the following in the preamble:

```
\setlength\titlebox{<dim>}
```

where `<dim>` is replaced with a length. Do not set this length smaller than 5 cm.

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 1: Example commands for accented characters, to be used in, *e.g.*, BibTeX entries.

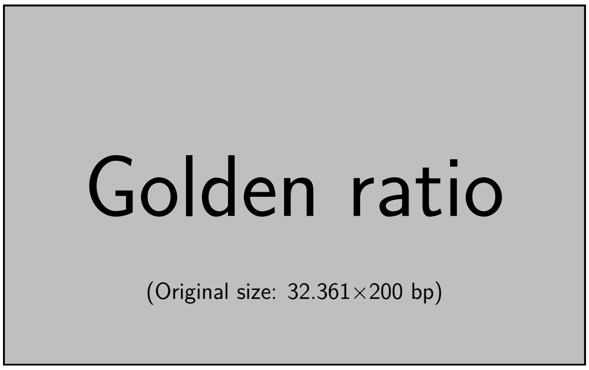

Figure 1: A figure with a caption that runs for more than one line. Example image is usually available through the `mwe` package without even mentioning it in the preamble.

D Document Body

D.1 Footnotes

Footnotes are inserted with the `\footnote` command.[2]

D.2 Tables and figures

See Table 1 for an example of a table and its caption. **Do not override the default caption sizes.**

As much as possible, fonts in figures should conform to the document fonts. See Figure 1 for an example of a figure and its caption.

Using the `graphicx` package graphics files can be included within figure environment at an appropriate point within the text. The `graphicx` package supports various optional arguments to control the appearance of the figure. You must include it explicitly in the LaTeX preamble (after the `\documentclass` declaration and before `\begin{document}`) using `\usepackage{graphicx}`.

[1] http://acl-org.github.io/ACLPUB/formatting.html

[2] This is a footnote.

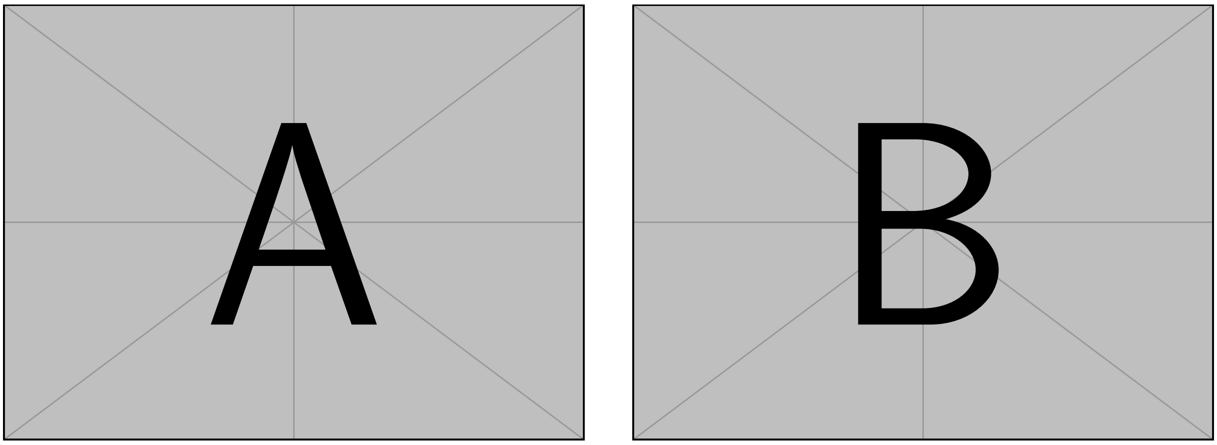

Figure 2: A minimal working example to demonstrate how to place two images side-by-side.

D.3 Hyperlinks

Users of older versions of LaTeX may encounter the following error during compilation:

```
\pdfendlink ended up in different nesting level than \pdfstartlink.
```

This happens when pdfLaTeX is used and a citation splits across a page boundary. The best way to fix this is to upgrade LaTeX to 2018-12-01 or later.

D.4 Citations

Table 2 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, like this citation to a paper by Gusfield (1997). You can use the command `\citep` (cite in parentheses) to get "(author, year)" citations (Gusfield, 1997). You can use the command `\citealp` (alternative cite without parentheses) to get "author, year" citations, which is useful for using citations within parentheses (e.g. Gusfield, 1997).

A possessive citation can be made with the command `\citeposs`. This is not a standard natbib command, so it is generally not compatible with other style files.

D.5 References

The LaTeX and BibTeX style files provided roughly follow the American Psychological Association format. If your own bib file is named `custom.bib`, then placing the following before any appendices in your LaTeX file will generate the references section for you:

```
\bibliography{custom}
```

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.

```
\bibliography{anthology,custom}
```

Please see Section E for information on preparing BibTeX files.

D.6 Equations

An example equation is shown below:

$$A = \pi r^2 \tag{1}$$

Labels for equation numbers, sections, subsections, figures and tables are all defined with the `\label{label}` command and cross references to them are made with the `\ref{label}` command.

This an example cross-reference to Equation 1.

D.7 Appendices

Use `\appendix` before any appendix section to switch the section numbering over to letters. See Appendix A for an example.

E BibTeX Files

Unicode cannot be used in BibTeX entries, and some ways of typing special characters can disrupt BibTeX's alphabetization. The recommended way of typing special characters is shown in Table 1.

Please ensure that BibTeX records contain DOIs or URLs when possible, and for all the ACL materials that you reference. Use the `doi` field for DOIs and the `url` field for URLs. If a BibTeX entry has a URL or DOI field, the paper title in the references section will appear as a hyperlink to the paper, using the hyperref LaTeX package.

Output	natbib command	ACL only command
(Gusfield, 1997)	`\citep`	
Gusfield, 1997	`\citealp`	
Gusfield (1997)	`\citet`	
(1997)	`\citeyearpar`	
Gusfield's (1997)		`\citeposs`

Table 2: 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.

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