

# Learning Intelligent Services for Edge-Cloud Computing<sup>\*</sup>

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## Abstract

A clear and well-documented  $\text{\LaTeX}$  document is presented as an article formatted for publication by CEUR-WS in a conference proceedings. Based on the “ceurart” document class, this article presents and explains many of the common variations, as well as many of the formatting elements an author may use in the preparation of the documentation of their work.

## Keywords

LaTeX class, paper template, paper formatting, CEUR-WS

## 1. Introduction

CEUR-WS’s article template provides a consistent  $\text{\LaTeX}$  style for use across CEUR-WS publications, and incorporates accessibility and metadata-extraction functionality. This document will explain the major features of the document class.

If you are new to publishing with CEUR-WS, this document is a valuable guide to the process of preparing your work for publication.

The “ceurart” document class can be used to prepare articles for any CEUR-WS publication, and for any stage of publication, from review to final “camera-ready” copy with *very few* changes to the source.

This class depends on the following packages for its proper functioning:

- `natbib.sty` for citation processing;
- `geometry.sty` for margin settings;
- `graphicx.sty` for graphics inclusion;
- `hyperref.sty` optional package if hyperlinking is required in the document;
- `fontawesome5.sty` optional package for bells and whistles.

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<sup>\*</sup> You can use this document as the template for preparing your publication. We recommend using the latest version of the ceurart style.

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All the above packages are part of any standard L<sup>A</sup>T<sub>E</sub>X installation. Therefore, the users need not be bothered about downloading any extra packages.

## 2. Modifications

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.

## 3. Template parameters

There are a number of template parameters which modify some part of the `ceurart` document class. These parameters are enclosed in square brackets and are a part of the `\documentclass` command:

```
\documentclass[parameter]{ceurart}
```

Frequently-used parameters, or combinations of parameters, include:

- `twocolumn` : Two column layout.
- `hf` : Enable header and footer<sup>1</sup>.

## 4. Front matter

### 4.1. Title Information

The titles of papers should be either all use the emphasizing capitalized style or they should all use the regular English (or native language) style. It does not make a good impression if you or your authors mix the styles.

Use the `\title` command to define the title of your work. Do not insert line breaks in your title.

### 4.2. Title variants

`\title` command have the below options:

- `title`: Document title. This is default option.

```
\title[mode=title]{This is a title}
```

You can just omit it, like as follows:

```
\title{This is a title}
```

- `alt`: Alternate title.

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<sup>1</sup>You can enable the display of page numbers in the final version of the entire collection. In this case, you should adhere to the end-to-end pagination of individual papers.

```

\title[mode=alt]{This is a alternate title}

```

- sub: Sub title.

```

\title[mode=sub]{This is a sub title}

```

You can just use **\subtitle** command, as follows:

```

\subtitle{This is a sub title}

```

- trans: Translated title.

```

\title[mode=trans]{This is a translated title}

```

- transsub: Translated sub title.

```

\title[mode=transsub]{This is a translated sub title}

```

### 4.3. 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.

**\author** command have the below options:

- style : Style of author name (chinese)
- prefix : Prefix
- suffix : Suffix
- degree : Degree
- role : Role
- orcid : ORCID
- email : E-mail
- url : URL

Author names can have some kinds of marks and notes:

- affiliation mark: **\author**[<num>].

The author names and affiliations could be formatted in two ways:

1. Group the authors per affiliation.
2. Use an explicit mark to indicate the affiliations.

Author block example:

```

\author[1,2]{Author Name}[%
  prefix=Prof.,
  degree=D.Sc.,
  role=Researcher,
  orcid=0000-0000-000-0000,
  email=name@example.com,
  url=https://name.example.com
]

```

```

\address[1]{Affiliation #1}
\address[2]{Affiliation #2}

```

#### 4.4. Abstract and Keywords

Abstract shall be entered in an environment that starts with `\begin{abstract}` and ends with `\end{abstract}`.

```
\begin{abstract}
  This is an abstract.
\end{abstract}
```

The key words are enclosed in a keywords environment. Use `\sep` to separate keywords.

```
\begin{keywords}
  First keyword \sep
  Second keyword \sep
  Third keyword \sep
  Fourth keyword
\end{keywords}
```

At the end of front matter add `\maketitle` command.

#### 4.5. Various Marks in the Front Matter

The front matter becomes complicated due to various kinds of notes and marks to the title and author names. Marks in the title will be denoted by a star (\*) mark; footnotes are denoted by super scripted Arabic numerals, corresponding author by an Conformal asterisk (\*) mark.

##### 4.5.1. Title marks

Title mark can be entered by the command, `\tnotemark[<num>]` and the corresponding text can be entered with the command `\tnotetext[<num>]{<text>}`. An example will be:

```
\title{A better way to format your document for CEUR-WS}

\tnotemark[1]
\tnotetext[1]{You can use this document as the template for preparing
↪ your
  publication. We recommend using the latest version of the ceurart
↪ style.}
```

`\tnotemark` and `\tnotetext` can be anywhere in the front matter, but should be before `\maketitle` command.

#### 4.5.2. Author marks

Author names can have some kinds of marks and notes:

- footnote mark : `\fnmark[<num>]`
- footnote text : `\fntext[<num>]{<text>}`
- corresponding author mark : `\cormark[<num>]`
- corresponding author text : `\cortext[<num>]{<text>}`

#### 4.5.3. Other marks

At times, authors want footnotes which leave no marks in the author names. The note text shall be listed as part of the front matter notes. Class files provides `\nonumnote` for this purpose. The usage

```
\nonumnote{<text>}
```

and should be entered anywhere before the `\maketitle` command for this to take effect.

## 5. Sectioning Commands

Your work should use standard L<sup>A</sup>T<sub>E</sub>X sectioning commands: `\section`, `\subsection`, `\subsubsection`, and `\paragraph`. They should be numbered; do not remove the numbering from the commands.

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

## 6. Tables

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

Table captions are placed *above* the table.

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.

Immediately following this sentence is the point at which Table 1 is included in the input file; compare the placement of the table here with the table in the printed output of this document.

To set a wider table, which takes up the whole width of the page’s live area, use the environment `table*` to enclose the table’s contents and the table caption. As with a single-column table, this wide table will “float” to a location deemed more desirable. Immediately following this sentence is the point at which Table 2 is included in the input file; again, it is instructive to compare the placement of the table here with the table in the printed output of this document.

**Table 1**  
Frequency of Special Characters

Non-English or Math	Frequency	Comments
Ø	1 in 1,000	For Swedish names
$\pi$	1 in 5	Common in math
\$	4 in 5	Used in business
$\Psi_1^2$	1 in 40,000	Unexplained usage

**Table 2**  
Some Typical Commands

Command	A Number	Comments
<code>\author</code>	100	Author
<code>\table</code>	300	For tables
<code>\table*</code>	400	For wider tables

## 7. 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.

### 7.1. 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 ... \end` construction or with the short form `$ ... $`. You can use any of the symbols and structures, from  $\alpha$  to  $\omega$ , available in  $\text{\LaTeX}$  [1]; this section will simply show a few examples of in-text equations in context. Notice how this equation:  $\lim_{n \rightarrow \infty} \frac{1}{n} = 0$ , set here in in-line math style, looks slightly different when set in display style. (See next section).

### 7.2. 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  $\text{\LaTeX}$ ; this section will just give a couple of examples of display equations in context. First, consider the equation, shown as an inline equation above:

$$\lim_{n \rightarrow \infty} \frac{1}{n} = 0. \tag{1}$$

Notice how it is formatted somewhat differently in the `displaymath` environment. Now, we'll

enter an unnumbered equation:

$$S_n = \sum_{i=1}^n x_i,$$

and follow it with another numbered equation:

$$\lim_{x \rightarrow 0} (1+x)^{1/x} = e \tag{2}$$

just to demonstrate L<sup>A</sup>T<sub>E</sub>X's able handling of numbering.

## 8. Figures

The “figure” environment should be used for figures. One or more images can be placed within a figure. If your figure contains third-party material, you must clearly identify it as such, as shown in the example below.

Your figures should contain a caption which describes the figure to the reader. Figure captions go below the figure. Your figures should also include a description suitable for screen readers, to assist the visually-challenged to better understand your work.

Figure captions are placed below the figure.

## 9. Citations and Bibliographies

The use of Bib<sub>T</sub>E<sub>X</sub> for the preparation and formatting of one's references is strongly recommended. Authors' names should be complete — use full first names (“Donald E. Knuth”) not initials (“D. E. Knuth”) — and the salient identifying features of a reference should be included: title, year, volume, number, pages, article DOI, etc.

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

```
\bibliography{bibfile}
```

where “bibfile” is the name, without the “.bib” suffix, of the Bib<sub>T</sub>E<sub>X</sub> file.

### 9.1. Some examples

A paginated journal article [2], an enumerated journal article [3], a reference to an entire issue [4], a monograph (whole book) [5], a monograph/whole book in a series (see 2a in spec. document) [6], a divisible-book such as an anthology or compilation [7] followed by the same example, however we only output the series if the volume number is given [8] (so series should not be present since it has no vol. no.), a chapter in a divisible book [9], a chapter in a divisible book in a series [10], a multi-volume work as book [11], an article in a proceedings (of a conference, symposium, workshop for example) (paginated proceedings article) [12], a proceedings article with all possible elements [13], an example of an enumerated proceedings article [14], an informally published work [15], a doctoral dissertation [16], a master's thesis: [17], an online document / world wide web resource [18, 19, 20], a video game (Case 1) [21] and



**Figure 1:** 1907 Franklin Model D roadster. Photograph by Harris & Ewing, Inc. [Public domain], via Wikimedia Commons. (<https://goo.gl/VLCRBB>).

(Case 2) [22] and [23] and (Case 3) a patent [24], work accepted for publication [25], prolific author [26] and [27]. Other cites might contain ‘duplicate’ DOI and URLs (some SIAM articles) [28]. Multi-volume works as books [29] and [30]. A couple of citations with DOIs: [31, 28]. Online citations: [32, 18, 33, 34].

## 10. Acknowledgments

Identification of funding sources and other support, and thanks to individuals and groups that assisted in the research and the preparation of the work should be included in an acknowledgment section, which is placed just before the reference section in your document.

This section has a special environment:

```
\begin{acknowledgments}
```

```
These are different acknowledgments.
```

```
\end{acknowledgments}
```



so that the information contained therein can be more easily collected during the article metadata extraction phase, and to ensure consistency in the spelling of the section heading.

Authors should not prepare this section as a numbered or unnumbered `\section`; please use the “`acknowledgments`” environment.

## 11. Appendices

If your work 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`

and note that in the appendix, sections are lettered, not numbered.

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Thanks to the developers of ACM consolidated LaTeX styles <https://github.com/borisveytsman/acmart> and to the developers of Elsevier updated L<sup>A</sup>T<sub>E</sub>X templates <https://www.ctan.org/tex-archive/macros/latex/contrib/els-cas-templates>.

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## A. Online Resources

The sources for the `ceur-art` style are available via

- GitHub,
- Overleaf template.